

THE METHOD AND TECHNIQUE
OF TEACHING

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THE METHOD AND TECHNIQUE OF TEACHING

BY

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INTRODUCTION

THIS book has been written with two ends in view: the first to help teachers to achieve a degree of practical skill that shall be worthy of their craft, the second to subordinate the wealth of illustrative detail to an ordered array of pedagogic principles. Little need be said, however, regarding the general aim of teaching, which is taken to be human welfare, both individual and social. To this general aim many others are subsidiary, the most obvious being a knowledge of the subjects of study. Our present concern is, rather, with the general methods by which the aims of the teacher may be realized. These general methods are discussed under the heads of stimulative teaching, associative teaching, incentives to learning, varieties of procedure, preparedness, sequence, interest, thoroughness, class government and discipline, questioning and examining. Subsequently, the teaching of each of the primary school subjects is considered in its turn.

Nothing more perplexes the intelligent teacher than the difficulty of discriminating between the varieties of psychological procedure which are involved in his work, or, if the single lesson may be adopted as the unit of teaching, between the various types into which lessons may fall. The analysis of lesson-types which is now submitted has been the result of many years of experience and planning, and includes a number of original features. It will be seen that a sincere effort has been made to reduce the evils of cross-classification to a minimum. All lessons have been divided into three main types, the informative, the practical and the affective, each of which has been appropriately subdivided. These three main types correspond to the threefold aspects of mental activity—knowing, doing and feeling. The writer believes that none of the types or sub-types indicated can be treated adequately by means which differ in essentials from the steps recommended, but naturally mixed types will be introduced at the teacher's discretion.

The last section of the book, including a treatment of the teaching of each subject of the primary school course, shows a certain temerity for which the writer is constrained to apologize. No one person can possibly be an authority upon every subject of the primary school course. The writer can only plead that he has attempted to teach them all, that he has directed innumerable student-teachers how to teach them, that he has introduced fresh illustrations into their treatment, and that he has consulted the best authorities concerning them. Clearly, the problems of special method cannot be disregarded in a book upon the technique of teaching. For it is not enough to comprehend the principles of method, nor even to have studied a number of illustrations of their application in practice. The teacher needs also to know the special methods which are applicable to the treatment of each subject. He understands about self-activity, but how is he going to teach spelling?

CHAPTER I

STIMULATIVE TEACHING

IN the course of his endeavour to reconcile the child to the curriculum, the teacher is compelled to have recourse to certain broad general methods of procedure, and to a large variety of useful technical devices. Unfortunately, either his general methods or his specific teaching may be faulty. It has been frequently noted that teachers tend to rely too much upon instruction and too little upon the spontaneous activities of their pupils. How roundly did Rousseau warn his contemporaries against their 'pedantic mania for instruction'! Worse still was the method of those old schoolmasters who relied upon the practice of rote memorization, relieved by scarcely any instruction at all. The technique of such schoolmasters was to set a paragraph to be learned by heart, hear it repeated without the book, and thrash their unhappy disciples for verbal errors.

Examples of Faulty Technique

Relics of this abominable practice have survived to our own time. One vigorous teacher is accustomed to propound a question suddenly to a boy, upon whom he literally pounces, dragging him upright by the hair, and retaining his hold until an answer has been given, probably with a vague idea of encouraging the process of reflection. After this, he thrusts him back violently into his place. Then the energetic preceptor seizes another lad by the shoulder, propels him before the class, and hurls him at the blackboard. Perhaps, overcome with fright, the timid lad finds himself unable to open his mouth. For this crime he is rewarded by two 'handlers'. The class having been thus tuned up, work proceeds briskly. It is in moments like these that one needs faith; for this teacher's technique, although it may make pupils work, can hardly be regarded as a credit to his profession.

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A less baleful, but equally crude and inartistic, technique is revealed in the following not unfamiliar procedure. Wishing to exercise his class of fifty in oral reading, the teacher causes each child to read aloud in turn, while the others are expected to follow in silence on their primers. 'Not knowing the place' is treated as an offence against discipline. Less than one-half of the class reads aloud during the whole course of the lesson, and those who happen to be favoured by a call do so for only one minute each. The teacher's art has proved inadequate to provide his class with reasonable practice in oral reading. What he might have done was to have divided the class into five groups of ten, located as far apart as possible, some of them outside the classroom. A good reader might have been appointed monitor to each group, so that five children might have been reading at one time, while the teacher exercised his judgment in roving from group to group.

As another example of faulty procedure, the practice of one school in connection with the teaching of science may be quoted. A class of some fifty boys enters the chemical laboratory, and at a given signal there is something approaching to a scramble for the limited number of sets of apparatus available. The problem is the estimation of specific gravity. As the inspector judges the work of the classes upon notebooks only, the teacher puts on the board some determinations, inappropriate to the actual measurements, and these are copied by the boys. Many, being slow, fail to effect or to complete their copies. These pupils borrow the notes of others, and enter the records at home. As a consequence, it was found that one boy, who displayed a beautifully-produced set of notes and diagrams, adorned with coloured inks and fine shading, was unable to answer the simplest question relating to his written work. At the end of a certain problem he had arrived at a specific gravity of 23. It was pointed out to him that he had discovered a new element, the specific gravity of mercury being under 14. He insisted, however, that he had copied from a notebook which the teacher had

passed, and was thoroughly convinced that his own records must be regarded as satisfactory.

So great is the teacher's prestige that school children regard him as infallible, preferring his decision in matters of science to that of a Rutherford or an Einstein. But in this case the teacher's technique lacked harmony with the principles of realism, thoroughness and continuity. Neither was the stimulus of experiment properly applied, nor were the pupils' ideas of specific gravity adequately organized.

Good Technique Rooted in Nature

Imperfect technique lacks the sanction of nature. Primitive man, however limited the range of his ideas may be, has a perfect technique of instruction. At the initiation of an aboriginal Australian boy to full membership of the tribe, it is desired to instruct him that the time has come to put away childish things. Sometimes the boys are ranged by the old men of the tribe into a circle. Into the middle of this circle two old men advance, bearing vessels of water. They seat themselves upon the earth, and gravely mixing the earth with water, commence to make mud pies. Thus, without the need of a word being spoken, the lads receive a lesson which they will never forget, to illustrate the incongruity of childish pastimes with the dignity of age. The appeal is from the senses to the understanding, and from the understanding to the sphere of conduct. Gifted modern teachers sometimes proceed in an analogous way.

Should our methods and technique, then, be akin to those of nature? By all means, provided that the teacher remembers what Rousseau forgot, that civilization is itself the outcome and the satisfaction of human nature. Human nature and civilization are not opposite, but complementary. The teacher is not the blind devotee of either; he mediates between them. The nature that we follow in the schools is not mere primitivism or savagery—nature red in tooth and claw, ravening for her prey. It is idealized nature, sublimated nature, better nature, that we follow in the schools. It is

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the nature of ends as well as of origins. It is a nature rooted in instincts, impulses and innate tendencies, but bearing the green foliage and fine flower of language and literature, art, history, geography, industry, science, health, religion and virtue. The methods and technique of modern schools reach forward as well as backward, with the object of joining the natural and the conventional together. To a certain extent, this is true even of primitive education of the type illustrated from aboriginal custom. But modern civilization differs from primitive standards in that it aims not merely at conserving but at improving customs and achievements. For this reason, a teacher would be unwilling to adopt the same procedure as the old men of the Australian tribe; he would feel it to be incumbent upon himself not merely to show his pupils what to avoid, but to indicate the positive lines of progress which it is hoped that their conduct may follow.

Psychologizing the Subject-matter

It is clear that there are several means, any one of which a teacher may adopt, to bring the nature of the child and the prescribed course of study together. He may simply fill the mind, pumping the subject-matter into the pupil, and using no method other than instruction. This is the most obvious means of teaching, and has been, perhaps, the most generally employed in the schools of the past; but it is not the most effective or the least wasteful form of procedure, nor is it the method adopted in the natural economy of primitive community life. Again, the teacher may try to adapt the nature of the child to the subject in hand. He wishes to teach a mathematical problem, before the pupil has developed sufficient power of abstract reasoning to apprehend it; and proceeds to force the reasoning process, somewhat as plants are forced in a hot-house, in order that the desired ground may be covered. The process is unsound, since it is more economical and more beneficial to the development of childhood to modify the course of study than to attempt to modify child nature. The latter is not subject to human control,

but as compared with the curriculum may be regarded as relatively fixed. It follows that the most effective way of bringing the child and the course of study together is to psychologize the subject-matter, or, in other words, to present it in a form congenial to the instincts, impulses and interests of the pupils. Regard child nature as constant, and treat the curriculum as variable.

We Learn in Two Ways

The skilful teacher follows the method of nature. To ascertain this, he must watch the nature of children, who themselves will show him how to educate. He will study the methods of natural development, applying them with the utmost care and discretion. It will be found that, in the case of mankind, and to a greater or less degree in that of the animal world at large, there are two primary methods of learning. We learn (a) by response to stimulus and (b) by association of things and ideas.

(a) *Response to Stimulus*.—Let us consider briefly the character of each of these two methods of mental progress. Throughout life we are continually engaged in making mental responses to stimuli that come to us from the outer world by means of the senses. The infant responds to the hunger stimuli of his own organism, and also to the touch and sight of food, and learns gradually various methods of taking nourishment. The use of a spoon is learned by response to a variety of stimuli, such as the sight of others employing it for eating, the sight and touch of the spoon itself, and the general demands of the situation in which the spoon has been provided. Through the eye, ear, mouth, nose and skin, there continually pours a series of stimuli, to each of which the mind tends to respond. In crossing a road, one is compelled to respond to the horn of a motor car, or to the whizz of wheels passing too close to one's person for equanimity. In the school, a great number and variety of stimuli should be provided in order that by reacting to them children may learn. Too often the only regularly-applied

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stimulus is that of the teacher's voice! But there are times when children may learn better from the stimulus provided by an object, a picture, a diagram or a model. The mere presence of pencil and paper may provide an adequate stimulus towards drawing or writing.

(b) *Association of Ideas*.—Although the process of responding mentally to stimuli received from the outer world is repeated so frequently in the experience of an individual that it may almost be regarded as continuous, there are many stimuli to which we do not attend. An adolescent may be able to study at one end of the family table while his brothers or sisters are chatting at the other end. He disregards the stimuli of their words and even, with greater difficulty, of their laughter. It is not that his organism is insensible to such sense-impressions, but that he wills to inhibit them. The stimulus to which he attends is that of his book; but he may choose to neglect this also, and to allow himself a few moments of reflection. During this period he is learning, by responding not to any stimulus from without, but to the forces of his own mind. He is engaged, probably, in combining the responses which he has previously experienced into new complexes. His method of learning is association. He becomes absent-minded, in the sense that he keeps the company of his own thoughts, and temporarily shuts the gates of his senses in order to organize and arrange the newly-recruited army of his ideas. He orders them in new companies and battalions, providing captains and officers selected from among themselves. In the classroom, the teacher assists the pupils to make such associations by linking and cross-linking the information presented, and by marshalling its elements in a forceful and logical phalanx.

Instinct Determines Response

No teacher can afford to forget that children do not respond to every conceivable stimulus or to every stimulus equally. As Anatole France has suggested, there are doubtless many scenes of surpassing beauty in the hills, valleys

and caverns of the air, but human sense is inadequate to appreciate their charms. Moreover, the mind becomes jaded by the continued endeavour to respond to a series of monotonous stimuli, such as are conveyed by a droning voice; so that even when a stimulus is relevant to human nature it may fail of the desired effect. Flogging the tired horse is a notoriously cruel and unprofitable occupation. The stimuli provided in the school should be congenial to human nature, not only in their quality but in respect of variety. To him who would solve the problem, what kind of urge should be applied to children, instinct is the only guide.

Instincts Express Themselves in Action

Hitherto, our attention has been confined to mental responses to sense stimuli. A complete response, however, involves action as well as thought. Children in school respond to the visit of a swallow to the classroom, not merely by giving it their attention, but by moving in their seats, by following the bird with their eyes, by laughing, talking, gesticulating. They have an instinctive tendency not only to apprehend but to act. Children are so compact of instinctive tendencies to action that the teacher cannot do better than to leave them on many occasions to react freely to the stimuli that have been presented for their benefit. This principle is sometimes described as 'following nature,' or, more specifically, as allowing freedom for self-activity.

The school abounds in examples of the way in which instinct expresses itself. A child sees a bully hurting a small boy, and his protective impulse impels him to wrestle with the bully. On the other hand, a boy whose self-assertion has been denied a legitimate outlet may become a terror to smaller classmates. In the infant school, at the close of the story, a child may begin without instruction to model the Pied Piper, his constructive instinct having been aroused by the teacher's narrative. Another illustration of the expression of instinct is provided by the way an elder girl will sometimes 'mother' a younger. The instinct of love tends

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to express itself in generous forms, and the instinct of anger in spiteful action. When a text-book is interesting, the instinct of curiosity not infrequently impels pupils to read ahead of the class. The instinct of fear may cause a child to lift his hand to ward off a blow, when no such abuse of power has been contemplated. Disputes over ownership awaken the combative instinct, which tends to issue in fighting. The instinct of flight through fear may occasion truancy. The instinct to excel may urge a pupil to hard study. The play instinct leads children to chase one another, to toy with their pens, or to engage in a hundred kinds of games. A child whose instincts tend towards leadership may take charge of a game of cricket which is in progress, without the formality of election. A child sometimes resorts to a lie to save himself from punishment. In each of these instances an instinct is being expressed in action, usually of a kind helpful to physical, mental and moral development, but occasionally detrimental to these processes.

Applications of One Instinct, Curiosity

While it is impracticable and unnecessary to demonstrate in detail all the ways in which a skilled teacher can reconcile the instinctive nature of children with the course of study which social exigency demands, yet many illustrations of such processes will be found in these pages. For the present, let us be content to illustrate the manner in which the teacher may deliberately appeal to one universal and individual instinct, that of curiosity, in order to arouse a demand for knowledge that may be satisfied by material selected from the prescribed curriculum. The subject of nature-study is investigated in the hope that in after years the pupil will study and appreciate the laws of nature. Curiosity about the habits and behaviour of insects and plants serves as an introduction to an interest in human life and conduct that cannot be satisfied until years have passed. The recital of strange customs piques the interest of pupils in foreign geography. A lesson on respiration is introduced by several

simple experiments with oxygen and carbon dioxide, in order that pupils may become curious about the question, what happens when we breathe? The principle of Archimedes may be taught in order to satisfy curiosity as to why a toy boat made of iron does not sink. Again, the teacher informs the class about the duration of day and night at the poles, withholding the explanation until the children's appetite for knowledge shall have imperatively demanded a knowledge of the cause of such extraordinary phenomena. The subject of air-pressure is best approached by a provocative experiment with glass and paper. Or, if an illustration may be selected from without the range of the primary school, curiosity about Latin may be aroused by a comparison of resemblances between many Latin and English words; and a survey of Roman custom may be necessary before the demand for knowledge about the relation of such words as *pall* and *pallium*, *paedagogus* and *pedagogue*, *exempt* and *exemptus*, can be appeased. Stories and myths may provoke a keen interest in literature. The fact that Alfred was the only English king surnamed 'the great' has been utilized to make the pupils anxious to read his biography. Sometimes the teacher propounds a 'poser', leaving the class to think the answer out for themselves. Pupils are given a varied collection of essays in one volume, and subsequently many of them seize opportunities of obtaining other glimpses into this particular sphere of literature. A child should be made curious about why the sun moves across the sky before he studies the movements of the heavenly bodies. Romantic curiosity is a great aid to the teaching of history, and especially of biographies. Curiosity, being at its maximum when strong elements of both old and new come into conjunction, causes children to be interested when the hero of one of their stories is mentioned again in another connection, although cases occur where pupils have failed to realize that the Julius Caesar of Roman history and the Julius Caesar of British history are one and the same. Children are readily made curious about such a problem as a very quick way of adding—hence

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multiplication. In these and countless other ways the art of the teacher reconciles the curiosity of his pupils with social standards of knowledge and achievement.

Instincts Should Not Be Unduly Thwarted

An important principle to be borne in mind while synthesizing child nature and civilization is that instincts should not be irrationally thwarted. Corresponding, as they do, to various fundamental needs of the human organism, they should be provided with appropriate channels of discharge, and sacrificed only in face of imperative social need, as, for example, the instinct of self-preservation may have to be sacrificed in battle. In general, however, instincts, as parts of man's original nature, should be treated with great respect. A small boy, living with an aunt, is not allowed to read what he wants, although he is fond of finding out things for himself, particularly about motors. On one occasion, having been taxed with theft, he produced a book on motors, purchased with the stolen money. In school, for the sake of the gregarious instinct, it is no longer considered advisable to prohibit all discourse among pupils or to insist on 'nothing but individual work'. It is obvious, moreover, that thwarted instincts breed many lies. Curiosity about sex matters, or about the taste of wine, may, according to the weight of evidence in such matters, be reasonably satisfied. An outlet may be found even for aggressiveness in relation to responsible monitòrial duties, such as the cleanliness and order of the classroom, although this is a case in which watchfulness and discretion are essential. Give a boy a cricket bat and he will not throw stones at windows; if the cricket ball, unfortunately, should effect similar damage, the householder may have the consolation of attributing it to accident. During manual work superior boys should not be debarred from their pleasure in helping their slower classmates. If instinct impedes a child from singing alone before the class, the inhibiting forces should be overcome gently and gradually, if at all. Books appealing to adventurous spirits should not

be banned. Neither should children's questions, being petitions for knowledge, be ruthlessly suppressed. The instinct of possession may be satisfied by permitting pupils to have things of their very own. It is frequently the case that children become delinquents through the chronic thwarting of their intrinsically harmless impulses. On the other hand, boys may become effeminate through the lack of opportunity to herd with others like themselves. In many cases mere prohibitions, as of bodily movement, or of going out of bounds, intensify the felt need for expression in the forbidden ways. Thwarted instincts of leadership may turn a promising lad into the leader of a band of hooligans, a terror to the social order. Many children suffer unnecessary deprivation of forms of expression in drawing, painting, carpentry or other constructive arts. Where the theory of geography fails to satisfy, the construction of geographical models and aids may exercise a helpful fascination. The 'play way' in schools satisfies many instincts which under more traditional methods would have found little or no outlet within the classroom. Thwarted instincts, as psycho-analysis has disclosed, are not infrequently found to be the centres of undesirable 'inferiority' or other complexes. From these and from similar instances it becomes apparent, not only that there are many instincts helpful to the teacher, but also that the teacher's technique should devise for every instinct its appropriate outlet.

Importance of Sense-stimuli

Since the time of Rousseau, and especially since that of Pestalozzi, the great importance of sense-experience has been widely appreciated although the technical applications of the principle of sense-perception to education continue to be somewhat in a flux. It must be borne in mind, however, that the teacher's own deportment, manner, actions, gestures, facial expressions and tone are a potent source of sense-stimulation to pupils. For this reason, every teacher should frequently become an actor before his class. He should

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express the meaning and spirit of his instruction in a great variety of ways. By this means the most commonplace operations may be invested with fascination. So helpful is mastery of expression that a great actor has been known to hold an audience spellbound by the grace and charm with which he takes out a cigarette and proceeds to light it. Such perfection of technique cannot be expected of many teachers, but a certain degree of expressive skill lies within the reach of all. Apart from this, there are countless means of providing helpful stimuli to the senses of school children. In nature-study, the teacher chooses only a subject which can be presented objectively to the class. A theoretical lesson in geometry becomes more interesting when concrete models have been introduced. Bright colours may be utilized to attract the notice of infants; congenial surroundings exercise a subconscious influence upon all. A model of the ship in which Columbus discovered America may give realism to the historical narrative. A picture is often sufficient to arouse a class from lethargy; but crude devices, such as striking the blackboard or table with a stick secure only a momentary display of attention. The writer has given a lesson on locomotive engines, in which a working model was introduced; the children spoke of this topic for weeks afterwards. It is of little use to talk of custard-apples to children who have not seen or tasted them, or of specific gravity in the absence of experiments on the immersion of bodies in water.

Some sense-stimuli, however, are not helpful, since they enter into competition with the teacher's work. A class of young children may be distracted by the entrance of a stranger into the room. The accidental visit of a dog, or of a swallow, is likely to be provocative of unwanted interests. A strange noise outside the classroom induces children to turn to the windows; the unusual cry of a street hawker leads them to giggle. Corporal punishment arouses emotions which are detrimental to intellectual apprehension as well as insulting to freedom of will; and in general it is clear that a sound technique will seek to minimize sense-impressions

that are regarded as derogatory to the process of mental development.

Sense-experience Promotes General Thought

It was pointed out by William of Occam that all our knowledge comes through the senses. This view, if discounted by the revelation of Kant, that the mind contributes categories to knowledge which do not come through the senses, is sufficiently accurate to become one of the foundations of the teacher's technique. General ideas have no meaning and no validity, apart from perceptual experience. With lower classes, it is most incumbent on the teacher to bring instruction into adequate contact with the field of sense-impression. A child who has seen dolls dressed as Anglo-Saxon herdsmen, hunters and soldiers is placed in a position to understand how their environment necessarily affected the occupations of the people. The use of a globe is essential for pupils to understand the phenomena of day and night. An apple cut into parts helps them to master arithmetical fractions. In nature-study, the close examination of objects precedes their discussion. A lesson on the Spanish Armada would convey but a poor idea of the conditions of Elizabethan warfare unless pictures were used to remove the misconceptions that arise from an acquaintance with modern warships. To give a lesson on cubes without a cube is like presenting the play of Hamlet without Hamlet. Perceptual experience is equally necessary to a study of the steel, or of the wool, industry; and young children cannot have too much of it, nor too often.

The pupils of two parallel lower primary classes were taught by different teachers. An inspector asked each class what the North Pole is like. One class was unable to answer, the other was able to reply in a fairly adequate way. It was discovered that the teacher of the latter class had shown a picture of a polar region, which had afforded definite perceptual images upon which general notions had been founded. In default of better material, or for the purpose of selecting

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relevant aspects, the blackboard should be freely used as a medium of diagrams and sketches.

The Significance of Crises

When a radical change in the environment occurs in such a way as to entail a sudden and powerful call to readjustment, then a crisis, or, in the Greek sense of the word, a catastrophe is liable to occur. In the life of the community at large, a crisis may be precipitated by a plague, a war, a famine, an earthquake, or a slump in trade. Into the lives of individuals, love, marriage, death, the loss of one's position, sudden disgrace, ill-health, or many other events, may introduce critical conditions. Fortunately, the schoolroom, being relatively sheltered, seldom becomes the scene of a crisis upon a considerable scale. It rarely happens that the pupils revolt, the building is burned down, or the teacher goes mad. During a crisis the activity of thought is enhanced, emotion is intensified, and the mind seeks distractedly for solutions. When a solution has at length been attained, the mind relapses into its normal habits of response and of association.

Acceleration of Thought in a Crisis

Little though they may affect society as a whole, there are crises in the lives of children that may exercise a profound influence upon their future as individuals. Having broken the teacher's ruler, on hearing his step in the corridor the child places the pieces together, covers them with a pile of papers, takes his seat, and begins diligently to read. Unless this incident is handled skilfully, the child's character may be affected. Under critical conditions the operations of thought are quickened and intensified; a child summoned by the head master or mistress rapidly recalls his list of past misdeeds. Frequently the acceleration of the thought-process is of practical value, as when a girl, having knocked over an ink-bottle or a vase, rights it before much of the liquid has been spilt. Again, somebody faints, or has a fit, and an immediate adjustment of thought and action becomes

necessary. Speed of thought is misused when it results in the prompt production of a variety of excuses; but has its merits in the hour of examination, as well as at other times of crisis. Hence, the teacher should not always conduct school work under leisurely conditions, but from time to time should manufacture opportunities and needs for quick thinking. Moreover, critical events often furnish incentives to action, as when a boy is informed that unless his work improves he may be debarred from the school picnic—in his estimation the main event of the year. Does not a teacher himself think hard when he comes upon a fact that he does not know, being desirous, perhaps, to conceal his ignorance until the opportunity shall have arrived to remedy it? Crises are sometimes produced when accidents occur in the playground, particularly if there exists no systematic technique for dealing with them. In the laboratory, too, a pupil must be well drilled to reach for an alkali on the instant that he spills a strong acid. The simplest events, however, are sometimes treated as if they were critical; for example, a class returning from physical training is encouraged to enter the classroom on tip-toe, and on many occasions such an excess of concentration may be justified, although a mock crisis should never be stressed in the same manner as if it constituted a real peril. There should be a difference between the atmosphere of boat drill and that of shipwreck.

Crises Involve Mental Strain

While the teacher should take means to quicken the operation of thought from time to time, he does well to remember that the gain thus derived involves some loss, in that his pupils have been subjected to an intensified mental strain. Although the natural rebelliousness and resilience of the young is generally held to be sufficient to safeguard their mental resources, many a pupil, especially in the upper classes of secondary schools, has visibly wilted under the stress of protracted preparation for examination. The actual work involved may have been less prejudicial to his psycho-physical

organism than the conception of the examination as an impending crisis. This is the only cogent argument for accrediting pupils from schools to higher institutions, such as universities, instead of submitting them to an external test, which in other respects must be regarded as preferable. A child has been known to undergo a serious collapse on the morning of an examination. Apart from examinations, mental conflicts may be produced when a child is forced to think about a subject under duress proceeding from a hard and unskilful teacher. It is obvious that following the death of a father or mother, no pupil should be pressed to learn lessons. Again, a lesson in music by a very strict teacher may involve a series of crises, after which the class appears to have become lax and apathetic. Or to take an illustration of a different order, a pupil is told that he must break off relations with a certain friend, following which he becomes unhappy. Mental strain continues until the conflict between friendship and authority has been settled in one way or another. For the truant, thoughts of impending penalties are likely to impair the gladness of freedom. Loss of the teacher's temper is sufficient immediately to provoke critical conditions, often accompanied by great waste of mental energy on the part of all. Even a story such as that of the storming of the Bastille, as told in *A Tale of Two Cities*, may involve unwonted agitation in the minds of sensitive pupils. Again, there is sometimes a noticeable reaction after a class has been keyed up under the eye of an inspector. From these considerations it becomes evident that school work should not always be intensive, but that periods of quiet, unhurried thought should alternate, as they do outside the schoolroom, with moments of concentrated attention.

CHAPTER II

ASSOCIATIVE TEACHING

Association by Co-presentation

IN dealing with crises, the teacher is concerned primarily with the principle of response to stimulus, and in this connection his technique aims partly at diminishing mental strain, partly at helping the individual child to discover suitable solutions of his difficulties, and partly at the tactful application of alleviating stimuli. To a child that has lost his mother, for example, the teacher shows sympathy, reveals the fact that death is not unhappiness, and points the way to fresh interests which his mother would have approved. It is desirable now to indicate the practical working of another fundamental principle, that of the association of ideas. In a sense it is *things* that we associate; as when the pupil combines the buildings, the teacher and his classmates to form his concept of the school. If two or more things have occurred together to consciousness, then afterwards, when one of these things recurs, it tends to reinstate the others. But ideas also are associated, provided they have occurred together to the mind. For example, 'eight sevens' become closely associated with fifty-six. Or, having seen pictures of Japanese gentlemen dressed in their national garb, the child on hearing the word Japan may recall their cylindrical caps, silk robes, white stockings and straw sandals. Mention 'desert' to many children; they at once think of 'camel', or sometimes 'Arab', because these concepts have occurred together in consciousness with frequency and almost with invariability. Instruct a child to sit in a certain position, and he expects to write; because that position is linked in his experience with writing. Having seen a picture of the knighting of Drake by Queen Elizabeth, the children ever afterwards associate Elizabeth with Drake. And who can recall Columbus without the discovery of America? Com-

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paratively few school pupils can think about Alfred the Great without remembering the apocryphal story of the burnt cakes; not that this indicates a failure of technique on the part of teachers, for the cakes in turn recall the historical fact of Alfred's flight from the Danes and his ultimate victory. Children frequently make unexpected and inappropriate associations; and a schoolgirl, being informed that 'Orsino pressed his suit on Olivia', fabricated a vision of the lady stoically enduring the pressure of a large flat-iron. It is clear that the teacher should endeavour to discover, to correct, and to supplement the associations of childhood. These are most definite and apt when they relate to daily interests. On hearing the school bell a pupil remarked, 'I suppose that we shall have a test, or be given questions to answer, or else will have to study some chapter of a book.' Many familiar commands are, through the associative process, anticipated; as when pupils produce paper as soon as the teacher has taken up the spelling-book. Because natural associations are to be preferred to artificial, it is more appropriate to draw a forest in green than in violet chalk. The teacher will present things together that he wishes to be remembered together, and vital associations, such as two and two with four, must be seared into the brain.

Vividness Favours Association

Not only does the teacher repeat associations, but he makes them as vivid as he can. To emphasize the sameness of chemical composition in diamonds and charcoal, he may produce a specimen of each. A talented teacher has been known to present the crimes of Richard III so intensely that the lesson has lingered in the memory of his pupils for a generation. For the sake of vividness, a new and critical term, such as *abscissa*, should be spoken loudly and written on the blackboard in large-scale lettering. In zoology, pupils remember best when live specimens have been introduced. The story of the Pilgrim Fathers may be told in vivid and interesting language, supplemented by pictures and a map.

The death of Nelson should be illustrated by a picture and dramatically told. In the science class, who forgets the simple experiment of burning magnesium? The most important parts of a diagram may well be represented in bright colours; and in written notes judicious underlining has a similar function, although the effect would be lost if such mechanical devices were overdone. Most teachers present the battle of Hastings vividly, and its outlines are seldom forgotten. Hastings and Waterloo stand out, moreover, because they lie near the beginning and the end of the historical course commonly taken by school children; and the initial and final stages of a series always have a psychological advantage over intermediate events. Vividness is often a sufficient guarantee of association, even when unaccompanied by repetition, and a pupil who once saw hydrogen cause an explosion which did considerable damage to both the apparatus and the experimenter never forgot that this gas has an explosive quality when mingled with air. A better evidence of sound technique is provided when the teacher draws a carrot in an appropriate red, crowned by green leafage, instead of in white. Teachers of young children do well to dramatize or act what they read. Posters add vividness to many lessons in geography, conveying striking impressions of English, Swiss or other scenery. It is a sign of poor technique, however, to make minor details vivid while the treatment of matters of importance is permitted to remain insipid and flat.

Stimulus and Association are Complementary

It has been shown that the mind works in two typical ways: firstly, by reaction to an external stimulus, and secondly, by association, which one is tempted to describe as reaction to the inward stimulus of one's own states of consciousness. It would seem, therefore, that there should be two main types of teaching procedure corresponding to these two modes of mental operation. The teacher may describe a medieval manor in an associative way, linking each new idea

to those already mastered by his pupils; or he may open the lesson by presenting a diagram or a picture which provides a body of potent stimuli to which the pupils may react in accordance with their instinctive nature. On reflection, however, it becomes apparent that the two principles involved are not as independent as they might appear. In each case the pupil is responding to a succession of stimuli—in the former to those of the teacher's voice and personality, in the latter to the visual stimuli furnished by picture or diagram. Even when the pupil follows his own train of thought he is responding to the stimuli provided by some of his own kinetic ideas. Thus the mind is constantly attending to some kind of stimulus or another, apprehended through the senses either directly as sensation or percept, or indirectly as image or as general idea. It is equally true that the mind is always associating. When responding to the diagram or picture, the pupils are associating its elements with one another and with previous mental content. Response to stimulus, then, except, perhaps, during the first sharp shock of a sensation, which is immediately transformed by associative elements into a percept, like the pumpkin into Cinderella's coach, is the obverse of association; and association the reverse of stimulus and response. The twin processes are two sides of the fundamental synthetic activity of mind. This accounts for the fact that school lessons as such are not usually divided into the associative and the stimulative types.

Yet the Distinction Affects Technique :—

One thing, however, is certain. The distinction between association and response, if not absolute, goes sufficiently deep to affect the teacher's technique. At times he correlates; at other times he stimulates. At times he deals with abstract numbers; at other times he introduces counters or pint-pots. If he should rely too much upon association, he tends to keep the thinking process too long on an abstract level; if he should refer almost everything to sense-stimuli, he fails to cultivate the power of conceptual thought. Hence

a skilful teacher helps his class to pass by means of rapid alternations from one form of mental activity to the other, not staying long enough with perceptual responses to defeat the formation of general ideas, nor yet burdening the intelligence unduly by slacking the mind for long periods into the air, as Aristophanes had it, like a beetle held on a string. What is more wearisome than to listen to a philosopher who does not know how to punctuate his lectures by concrete illustrations? It is noteworthy how that divinely-gifted teacher, Socrates, used to relieve the abstract freely with the concrete. 'Is it possible to train a mind that shall be at once fierce and gentle?' (abstract). 'Yes, the combination appears in a well-bred dog' (concrete). The question is meaningless but for association of ideas; the answer equally meaningless but for reference to the stimulus of perceptual experience. The skilful teacher employs association and sense-stimulus—direct or imagined—in such rapid changes that it becomes almost impracticable to divide good lessons into the associative and the stimulative types. To a certain extent, however, a lesson in algebra or in formal grammar would illustrate the former type, and a nature-study excursion or a drawing lesson the latter.

Schoolroom Responses May Become Fixed as Habits and Institutions :—

Responses to stimuli, when repeatedly associated, develop into habits; and habits, especially when objective provision has been afforded for their exercise, crystallize into institutions. Writing from copies becomes a habit; exercise- or copy-books have become an institution. Raising one's hat is both an institution and a habit. An institution, for present purposes, may be defined as an objectified habit, that is, one that is not merely dependent upon the individual for its maintenance, but ordained by the school or by some other social group. The child's habitual posture when writing may not necessarily coincide with the position that has become institutional in the school. A certain class began a series

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of competitions in reciting poetry; other classes took up the plan, and finally it was adopted by the school as a whole. Some teachers definitely institute the plan of having no hands raised in response to a question; with others the raising of hands is allowed to become a habit, and finally almost an institution. Hence, one of the things that a teacher or a school is called upon to determine is what actions are to be permitted to become habits, and what habits shall be regularized as institutions. Clearly, lack of punctuality, even if habitual to some pupils, cannot be permitted to become universalized or objectified. The habit of tidiness may, however, be crystallized by the institution of daily inspection. Neatness can be made habitual and neat books can become a school institution. Some teachers institute the plan of a reshuffle of places in accordance with weekly tests. Many schools institute regular assemblies of pupils. To begin sentences with a capital letter becomes a habit; but it is also a universalized institution, like the multiplication table. Standard speech is another example of an institution which must be approached by the path of habit. Much of the teacher's technique may be regarded as objective and institutional, although, while wide variations prevail in the personality, aptitude and opinion of teachers, much inevitably remains to the realm of individual habit.

Suggestibility and Contra-Suggestibility

An adult, especially if he be well educated, develops a body of definite associations, which by their balance one against another create a mental poise not easily to be disturbed. For this reason, children are more highly sensitive than adults to stimuli proceeding from the outer world. A child responds with far greater completeness than an adult to a visual or verbal suggestion, whether presented by the teacher or by another. Imitation, so important an instinctive tendency for education, is closely related to suggestibility, being practically its obverse. In a kindergarten class, one little girl cut her finger slightly, so that the teacher had to dress it, whereupon a classmate claimed that her finger was hurting; and

although it had suffered no injury, she was so much in earnest that the tears came into her eyes. By young children a suggestion from the teacher is regarded as final, so high is his prestige. On the other hand, there is a phenomenon known as contra-suggestibility which frequently gives more trouble to teachers than its opposite. Indicate to a boy that he should not read so many comic papers and detective stories, and he may react in the opposite direction from that which has been suggested. Dislike of a teacher or of his methods breeds contra-suggestibility, and a similar effect may be produced by repeated reprimand. Not infrequently, the moment a teacher's back is turned, a child will repeat an activity from which he has just been bidden to desist. Occasionally, but seldom, a child will be found who repeatedly and without reason disagrees with the opinion of the class. In this case the quality may be inherent. Generally, however, the best antidote to contra-suggestibility may be found in freedom. Negative commands—don'ts—are contra-suggestible, because they enunciate the very offence which has been prohibited. This is one objection to the censoring of books. If, however, a considerable number of pupils should display contrariety at the same time, it is clear that something has gone wrong with the tone of the class; and human nature in the mass being very nearly constant, in almost every case the teacher will discover himself to be in the wrong. It may be no fault of the teacher, however, if one pupil through contrariety should make not a whit of progress in music, or if another should remain talkative contrary to expressed instructions. Obstinacy is habitual contra-suggestibility; forbidden to play with a pencil, some children deliberately 'dare' the teacher's wrath. There are times when the best work can be secured from children by the suggestion that a given problem may be too hard for them. In general, perverse reaction may be anticipated whenever a suggestion falls athwart a powerful complex; and in such cases, too much or too direct suggestion on the part of a teacher has the opposite effect from the one intended.

Thought Tends to Issue in Action

Not only do we act in accordance with instinct, but we tend in some degree to act upon every form of thought, unless it be consciously speculative. This is a principle of which the teacher's art should take definite cognizance. The natural tendency of his pupils is to express their thoughts in action. A child, having heard the story of Sinbad the Sailor, may, when opportunity offers, be the readier to annex unprotected property. Many of the weird curves which an infant scrawls on paper are ideographs. His thought has found its expression in the action of drawing, which may signify, perhaps, the victory of an army led by himself over a formidable host of his enemies. The action which expresses a thought may be quite unconscious. Thinking of kicking a football, one may experience a mysterious itch of the right foot. Without action, thought is incomplete. After a war-commemoration service, the wise teacher has the pupils perform some action for the public good, at pains to themselves; it may be to clear the weeds from a public monument, or to place wreaths at its base. It was contemplative thought that induced St. Francis of Assisi to remodel his life to the admiration of the ages. In a science period, abstract thinking should be followed by experiment. Similarly, after hearing the story of Magna Charta, the pupils ought to dramatize the scene. *Imitation* is a process in which action naturally succeeds thought, as when children, after watching the teacher make a wax flower, proceed to make one for themselves. Even such reflex actions as sobbing, sighing, laughing and crying should be regarded as outlets of mental states, and should only be inhibited when they seem to pass the bounds of necessary or appropriate expression. Cinema pictures occasionally, though seldom, provoke desperate deeds. It must be remembered, too, that all art and invention represent the carrying of thought into action. In such fields the action is generally delayed; but the immediate tendency of thoughts towards deeds, known as the ideo-motor tendency, may be illustrated by the fre-

quency with which children who think of an answer cannot refrain from calling it out. How often do spectators on the athletic field, encouraging their candidate by the call, 'Run! run!', find themselves actually running. And the perception of names written on the desk has been sufficient to impel many children to a similar reprobate action, regardless of other considerations, such as reflection might have adduced. However efficient in other respects, a technique which fails to allow for the ideo-motor tendency is inadequate to the teacher's use. The natural relation between progress in intelligence and progress in action should be maintained.

Danger of Fixed Ideas

While many reactions should be reduced to habit, so that the response to a given stimulus, whether by word or by deed, occurs automatically, it remains true that there is danger in fixed ideas and complexes, particularly when they happen to affect the sphere of ethical conduct. Having been repeatedly called to attention, a boy becomes obsessed with the idea that the teacher dislikes him; he assumes a sulky and mistrustful air, stubbornly persisting in his erroneous belief. Some children are difficult to move from the theory that stealing fruit is justifiable, provided the fruit can be reached without jumping the fence! A purely intellectual obstinacy is hardly less desirable, as when a child, despite all explanation, persists in the view that on the horizon the sky actually does come down to meet the sea. Many children form relatively fixed ideas for want of breadth of experience, as when they believe that all Dutchmen wear wooden shoes and baggy trousers, and all Welsh people the 'witch hat' and cloak. Sometimes young children evolve a fixed idea that to read well is to read loudly. A girl whose compositions had been praised became unshakably but regretably convinced that she is destined to be a poetess. Obsessed with the idea that his neighbour is trying to copy from his work, a pupil may become a nuisance to his class. Too often a child loses confidence in himself; the idea takes possession

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of his mind that he simply cannot do sums, that he lacks the necessary brains. Having been repeatedly told by his fellows that it is impossible to pass in French, a boy has been known to fail in translating a simple sentence, every word of which was well known to him. Unless judiciously taught, pupils may form an anti-music or an anti-mathematics complex. A few boys and girls become complex-ridden about wireless telegraphy or some other hobby; but mental fixation of this type is usually transient and harmless. Fixed ideas in multiplication, as that $11 \times 12 = 121$, are sometimes the source of considerable trouble by reason of their application to subsequent arithmetical operations. It would appear that general ideas as well as particular facts should from time to time be subject to revision, and therefore should not be too dogmatically established. What is more dangerous, for example, than the assumption that every plank in the platform of any given political party is invariably right?

Forgetting as an Art

To forget well is a talent worthy of cultivation. The child who, from auditory data, has formed the notion that the equator is an imaginary *lion* that runs round the middle of the earth, does well to forget it. There is no harm in dismissing from memory the details of most fairy-tales or novels when their purpose has been served; they can only be kept fresh in memory at the expense of more important matters. When a child leaves the infant for the primary stage, he soon forgets many of the jingles and nursery rhymes that he has learned, as of no further use in his school career. A teacher may mention that on the occasion of a certain battle so many thousands were killed, but it is unnecessary to remember the number; if required, it can be looked up. Frequently a pupil who does not answer well in class on matters of detail may do well at examination, because he has been in the habit of setting things out according to a logical plan, which results in a thorough mastery of essentials. For pupils to remember each detail of the physical

appearance of Queen Victoria is merely waste of effort. The detail is necessary only to convey a general impression, and when this impression has been made the details no longer have value. Moreover, when pupils have been given wrong information, or have been taught faulty methods, the process of forgetting becomes a safeguard to their intellect. If mass and weight have been inextricably confused, the pupil had better forget everything, and begin over again. At times, to forget misdeeds may be a safeguard to morality, although great facility in inhibiting the emotions associated with wrong-doing is a mark of the truly criminal type of mind. In general, bad language or unsavoury stories are easily forgotten by the pure in heart. On the other hand, many pupils forget badly; they remember King Alfred's burnt cakes, but consign to oblivion England's heroic resistance to the heathen Danes. One of the main differences between talented and ordinary minds is that the former make the better selection of things worthy of remembrance, among which an orderly arrangement of general ideas and crucial instances, such as is typified in many books on law, may be mentioned. Commit to memory nothing but well-understood, well arranged essentials.

CHAPTER III

THE INSTINCTS AS INCENTIVES TO LEARNING

The Individual is not a Mere Battle-ground

IT has already been said that the teacher mediates between the child and society. He proceeds to place the pupil in possession of a civilized inheritance richer far than any store of silver or gold. The pupil, it is true, may not aspire to enjoy this inheritance, and is unlikely to do so unless the teacher should be skilful enough to make it appear attractive. The child has to be induced to delve for spiritual wealth. Fortunately, the teacher is spared the necessity of inventing spurs to action, every child being already equipped with these in the form of a variety of impulses, instincts and tendencies to action. It remains for the teacher to direct this innate set of activities towards the desired goal, that is, the mastery of the curriculum and the attainment of social standards of conduct and of taste. This is the main call upon the teacher's technical skill, as well as upon his goodness of heart and head. Out of the child's quiver of instincts are drawn one or more arrows to be directed towards the immediate mark. Motives and incentives are thus established in the pupil's mind.

It is a mistake to treat the pupil's mind as if it were a mere Herbartian theatre of ideas, or even a behaviouristic battle-ground of stimuli. Allowance should be made for inherent human freedom. A child may be disinclined to take an active part either in outdoor sports or in school work; but it is necessary for the teacher to study not only his actions but his temperament before designating him wilfully perverse. If an appropriate stimulus were alone sufficient, then a logical order of procedure in lessons would fulfil all the teacher's requirements; but, in fact, he has to appeal to interest and to imagination. Thus in a geography lesson on Japan, the best order of presentation is not necessarily first,

location, then climate, then vegetation, although these topics are causally related to one another. Nor is it helpful to treat the mind as if it were purely a physical function. A child having been called before the head master for breaking a window, the behaviourist would be interested in reading his pulse and in studying the peristaltic movement of the stomach and the secretions of the ductless glands; but while such phenomena may interest the teacher, they do not determine, though they may conceivably affect, the technique of dealing with the problem. The teacher would be even more concerned with the mental processes which have led to the given response than with the response itself. Again, it is not merely that certain stimuli may have induced a boy to play truant; the question is, what kind of experience, emotion and character lies behind his offence? Only in very limited spheres, and then with reservations, does the child become an automaton. Eight sevens may automatically suggest fifty-six; but the child should be prepared to prove his result by a logic which is foreign to the nature of a calculating machine. Even the comparatively great liability of the human mind to error is in reality a condition of rational superiority. Reason by its nature is capable of wide variation in all directions, and the mind of a boy torn between the desire to play football and the desire to do his homework should be viewed as more than a passive field for a contest between conflicting forces.

*Subjects Should be Made to Correspond with Genuine
Wants or Felt Needs*

Just as lower organisms act in relation to needs which are felt as such, so also do human beings act most effectively in relation to needs which have been apprehended or realized. Otherwise, the mind rests indifferent. Who cares, for example, on what side of the window of a train the catch is placed? At best, any subject of study which has no correspondence with the wants of the moment can be regarded only as a potential stimulus. For several years a print of

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the Mona Lisa hung in a classroom unnoticed by half the children, until their studies brought them to Leonardo da Vinci. Similarly, the principle of relevance to need requires that the first reference to Oliver Cromwell should not be connected with the date of his birth, but with his decisive action in the Civil War. Again, if nothing else had to be considered, the ideal way of getting children to learn French would be to place them in such a situation that they could communicate in no other language. A girl of thirteen will read no other literature but romance, for her nature is beginning to experience the need of a romantic element. A boy who wishes to become an engineer will study mathematics, mechanics and science, to which prior to this ambition he had remained indifferent. Similarly, a young child uninterested in abstract number may be quite capable of counting the blocks with which he builds. Children should be taught to read by the aid of a primer that they want to master; it may be on account of the sailors, ships and whales which appear among the illustrations. The son of a botanist being accustomed to regard plants as significant, readily pursues natural history as a study. Similarly, the main difficulty with such a subject as Latin is to induce pupils to feel a real and personal need of it; but this is not impossible to a teacher who sets about the task with pains and skill. Feeling no need, a boy may study chemistry under compulsion, only to conceive an aversion for the subject. On the other hand, there may be a real need within him for poetry, though as yet unrealized. Girls in their 'teens are more readily induced to study the art of painting than that of fishing, and a boy whose ambition is to be a carpenter prefers manual work to history. Again, few people are fond of Euclidean geometry, simply because the majority cannot persuade themselves that much of it is necessary.

Wants, However, May Be Sublimated

By skilful technique, the original or native wants of the human organism can be raised to a higher plane. This prin-

ciple is of great importance in education, and the following illustrations may serve to indicate how it should be applied. Self-assertion may be elevated from quarrelling to painting, and combativeness from bullying to monitorial responsibilities. A boy who was once addicted to organizing minor thefts, being in the habit of inducing others to carry out a raid on a shop while escaping detection himself, was interested by his teacher in geology and botany, and now prefers to lead enthusiastic parties of his classmates on excursions in search of specimens. A child who delights in pulling things to pieces may easily become interested in such an activity as the carving and making of a wooden tray. The 'gang' instinct among small boys should be satisfied in organized games and in other co-operative activities, such as dramatization; the acquisitive instinct may express itself in collections. One boy in a certain class was a recognized gang leader, known to his classmates as 'Nicotine'. Only by setting him in front as marshal of the class could the teacher satisfy his ebullient spirit; but woe betide any urchin who showed unruly tendencies while he officiated as marshal. Thus a pest became a pillar. Children over-fond of playing with toys may be given useful practical work which satisfies their natural bent equally well, and to more profit. The desire to change the form of outward things is better expressed in clay modelling than in making mud pies. And if children's natures are such that they must dislike, hate and despise something, let it be what is base and dishonourable, not the teacher nor the school.

Games Express the Social Instincts

The play spirit may, perhaps, be defined as the spirit of finding satisfaction in the activity of the moment, without reference to any external end or aim. It is revealed sometimes as superfluous energy, sometimes as make-believe, sometimes as preparation for future life. As far as the school is concerned, play of the first type should be practically confined to outdoors; but imitative and anticipatory

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forms of play are worthy of extensive use in the classroom as well as in the field. Elementary number work may involve playing shop, the children buying, selling and giving change, using as materials various small packets and tokens. This kind of play is both imitative and anticipatory; the children pretend or 'make believe', and at the same time prepare themselves naturally for adult activities. When play has been subjected to a set of rules and invested with definite purposes, it becomes a game; and the capacity for the skilful introduction of games is now recognized as an indispensable part of the teacher's technique.

In the majority of secondary schools it is compulsory for pupils to engage in some form of sport, partly for reasons of health, but largely because in such a game as football the boys are led to respect one another and to strive for the common good. The mere act of passing the ball is an expression of unselfishness and group-mindedness. The social instinct is expressed in all games in which 'sides' are taken, the individual being subordinated except in so far as he may render service to the group. To this extent the same principles apply in primary as in secondary schools. Games develop sociable qualities such as good-fellowship, sportsmanship and ability to take defeat. Even in athletic events, although the contestants compete as individuals, it is the idea of the school that furnishes the incentive. The outlook of each competitor in sport is broadened by familiar contact with the views and the pooled experience of others, and members of teams tend to gather together amid other surroundings than the playing-fields. They learn to alternate initiative with submissiveness, leadership with subordination. Football has transformed a boy previously dumb in the classroom and diffident either in expressing opinion or in congregating with his fellows, into such an eloquent and obstinate exponent of his views that he was chosen captain of the team. A team becomes a small community, with varied phases of friendship, government, pleasure and work represented in its activities.

Classroom Games

While these considerations apply especially to such field games as football and cricket, there are games for the classroom which possess advantages of a somewhat similar kind. It is related by Plato that the Egyptians used to make a game out of arithmetic, and the practice is still retained in the best approved quarters. One form of such a game is to set on the blackboard a series of simple problems, divide the class into groups, start and stop all the contestants at a given signal, and total the number of right solutions on each side. The winning side may be given the privilege of marching out before the losers, but this is generally unnecessary, and perhaps not particularly advisable. The ancient Greeks had spelling-dances, which might well be re-invented. Spelling lends itself to games such as bringing a child before the class to answer all questions founded on the class work in reading. The questions are asked with rapidity by each member of class in turn, the questioner replacing the answerer whenever the latter fails. A good speller may be detailed to act as timekeeper, recording on the blackboard or on paper the respective times for which the children on the floor have been able to survive the test. Some teachers like to introduce 'relay' races of pupils to the blackboard, a member of each side writing down the answer to a problem, racing back to his place, and handing the chalk to his next neighbour.

Bodily Processes Underlie Mental Activities

The technical use of games is unlikely to be adequate unless the teacher bears in mind that activity of mind is conditioned by activity of body. In a narrower way the brain and the nervous system, in a broader way the general physical condition of the pupil, must be equal to the strain that the processes of thought, will and feeling place upon them. Relatively stable from eight to twelve years, the child's psycho-physical condition during this period is well adapted for the mechanical or drill work which serves as

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a foundation for future progress. In the 'teens the minds of the young are adapted to the formation of general ideas, constructive images, and reasoning. At all stages, fatigue impairs mental work; but true or extreme fatigue is rarely suffered under the conditions obtaining at a good school. Generally speaking, a fatigued pupil will be found to have milked cows before coming to school, or to have been subjected to some other extrinsic stress. In that case the wise teacher lets him sleep before attempting to teach him. The process of learning is favoured by free neutral connections in the brain, with a diminution of unwanted resistance at the *synapses* or gaps between nerve-endings. When a stimulus is repeatedly attended to, the synaptic resistance breaks down, the mind acts more quickly in response, and a definite reaction becomes habitual. To walk about while learning a poem makes the learning easier, since natural tendencies to movement are being satisfied without any distraction of attention. On the other hand, it is difficult to study in the evening after a football match in the afternoon, the reaction from extreme physical strain being unfavourable to mental concentration. Physical defects, such as deafness, are obviously detrimental to intellectual progress. The condition of the nervous system is most important, resembling, as it does, a delicate telephonic organization in its need of complete circuits and freedom of action. Brain defects make mental defectives. Concentrated attention is accompanied by physical changes, so that a child learning to write may be seen to protrude his tongue, contort his face and curl his leg about that of his chair. Sometimes hunger becomes a cause of restlessness and fidgeting in children. Emotions, as is well known, are invariably accompanied by physical perturbations. A child's anger having been aroused, the blood races more quickly, impurities are carried away promptly, the adrenal glands function with intensity, and under these conditions the impulse to movement becomes strengthened and augmented. Deficiency of the thyroid gland may alone be sufficient to account for dullness and backwardness on the

part of an individual child. So carefully must the teacher's art adjust itself to physical conditions.

Helpful Instincts

It is to be observed that the teacher not only communicates knowledge, but also develops powers of action and moral sentiments. He cannot do any of these things without the help of his pupils. He may introduce a child to ideas, but cannot make him adopt them as his own. Fortunately, the mind of the average child is not only receptive, but vigorously active. It is instinctively inclined towards knowledge, towards action, and possibly towards goodness. Consequently, the teacher has only to conduct his work in such a way that the child's own inclinations shall lead towards the desired ends. The purpose of the movement known as 'child study' is very largely to discover by accurate observation just what those inclinations are. Clearly, there exists an initial difficulty, that they are not alike in all children. For example, pugnacity is a natural inclination of children, but some children are far more pugnacious by nature than others. Nevertheless, the minds of children are so much alike that, under certain conditions, a large class may be taught simultaneously by one teacher. The variety of human nature is only equalled by its sameness.

Is it possible, then, to tabulate the instinctive tendencies which are likely to be of most use to the teacher in the conduct of the lesson? In the first place, the most useful tendencies should be universal. An innate tendency of a single pupil, unshared by other pupils, is less likely to assist the class teacher in his class work than a tendency common to all. If one boy only had an innate tendency to walk on his hands, the teaching of the class would not be simplified; but if a whole class of boys were to evolve such a tendency, they might be marched into school in that position, or trained to look for lost objects on the ground, or to observe the habits of ants, or to wave a leg in order to attract the teacher's attention. Any tendency, however unpromising,

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may be turned to account, provided it is shared by all the pupils in common. In the second place, the tendencies most useful to the teacher are those capable of being directed towards the acquirement of knowledge, or of skill, or of right habits and sentiments. The following instinctive tendencies satisfy both canons of utility:—

- (1) Bodily movement.
- (2) Mental response to sense stimuli.
- (3) Association of objects simultaneously perceived.
- (4) Association of ideas which contain a common element.
- (5) Curiosity.
- (6) Imitation.
- (7) Manipulation of objects, including construction and destruction.
- (8) Expression.
- (9) Gregariousness, with which may be connected play, sympathy and love.
- (10) Rivalry.
- (11) Fear.

These and other instinctive tendencies are not mutually exclusive. On the contrary, they are inextricably interwoven with each other, so that cross-classification is to some extent unavoidable. James and MacDougall, in their classifications of instincts, omit the strictly mental activities (2) and (3), which should, however, be included, as one's thought, properly interpreted, is just as much an action of the human organism as the movement of one's hand.

Bodily Movement

Let us now inquire in what manner the instinctive tendencies enumerated above may be employed to the greatest advantage in the conduct of the lesson. The tendency to bodily movement appears earliest of all, and is fairly general from the outset, although some instinctive actions, such as breathing and sucking, are more specific than others.

With the lower animals, most instincts are specific and definite; but with man, most instincts are so general as to be capable of development in a great variety of directions. Thus, while a bird builds its nest according to an immutable, mechanical plan, a man may build his house to any design not naturally impossible. The non-specific character of human instincts is of great value to the teacher. The instinct of bodily movement lends itself to the uses of calisthenics and of various kinds of manual work, just because it is not specifically attached to certain actions. In conducting the work of his class, the teacher should remember that children instinctively make a great variety of movements, and are not naturally inert for any length of time, except during sleep. Consequently, unless opportunity for frequent and varied movement is provided to the pupils, restlessness becomes unavoidable, and is, indeed, necessary in the interests of their development. Do not try to make pupils sit still, except as a momentary exercise. The word 'exercise' is used deliberately, as greater effort may be required to sit still than to move; and what is more serious, the effort of sitting still beyond a very few minutes is likely to be detrimental, at least to young children.

In conducting lessons, then, the teacher should make provision for free physical movement. A few definite suggestions may be offered. Sometimes certain children may stand, sometimes come to the blackboard, sometimes move to the floor in front of the class, sometimes gather in groups about leaders, sometimes be grouped in pairs, sometimes go through physical exercises for one or two minutes, sometimes change places, sometimes be permitted to move practically at discretion, as in manual work or in work such as is done under the Montessori and Gary systems. Who does not recollect the relief of simply walking a few yards to the blackboard, when that rare privilege came to one in school? The teacher who keeps pupils immobile forgets his own youth, and invites disorder. The pleasure experienced by most pupils during the periods devoted to manual work is

largely derived from the increased freedom of movement. The variety and extent of physical movements cannot but affect the development of the mind. Immobility may be prejudicial to both mental and physical education.

Appeal to the Senses

Secondly, in conducting a lesson the teacher should utilize the tendency to react to stimuli which are presented to the mind through the senses. The mind of the child lies to a great extent at the mercy of such stimuli. The fall of a blackboard, the rolling of a ball, a hailstorm, a grimace, a gesture—these, and a thousand other occurrences, irresistibly claim the attention of the pupil. The tendency of the mind to respond to sense-stimuli is essential even to self-preservation. Primitive man depended for his very existence upon his alertness. Even to-day, the mind that refuses to attend to the horn of a motor car, or to the hiss of a snake, endangers itself, together with the bodily organism with which it is connected. The trained and experienced mind of an adult has learned to distinguish between stimuli which are negligible, or at least of minor significance, and stimuli which are of great and even of vital importance. The mind of a child, however, is responsive to stimuli which seem trivial to an adult. While a swallow flies about the schoolroom it may be impossible for a child, but quite possible for an adult, to continue his studies. This being the case, the obvious course of action for a teacher to pursue is to make use of the natural tendency of the mind to respond to sense-stimuli. The power of resisting a sense-stimulus tends to vary inversely with the age of the pupil. Hence, the younger the child the greater the necessity of providing materials which will affect the senses in such a way as to induce desirable mental reactions. Young children should be taught through the senses.

Since Pestalozzi, the principle of sense-education has been taken for granted, but not always respected. In order to educate his pupils through the senses, a teacher must provide

himself with apparatus of great variety. Suggestions concerning such apparatus are provided elsewhere. The kindergarten and Montessori materials, the nature-study specimens, collections of post-cards and pictures, and other objects, enable the children to educate themselves by sight and touch. It is not generally realized, and does not seem to have been understood by writers upon sense-education, that even the imagination of objects is of the greatest use in the school-room. The writer once visited a class, the teacher of which was giving a highly uninteresting lesson in mental arithmetic. Taking over the class, he went to the door in order to take delivery of an imaginary basket of apples from an imaginary errand boy. He distributed imaginary apples among the children, taking three from one, giving four to another, meanwhile asking questions in addition and subtraction similar to those which the teacher had been asking, but with far keener response from the pupils. These children had reached a stage at which the use of imaginary objects was even more attractive than the use of the things themselves. Sensory suggestion makes an admirable supplement to sensory presentation.

No one can teach young children well without utilizing their instinctive tendency to respond to objects which they can see and touch. Consequently, Dr. Montessori and others have insisted upon the training of the senses. This expression is somewhat misleading, since it is the mind rather than the sense-organs which may be trained to discriminate between finer shades of colour or finer differences of shape. On the whole, normal children have their minds trained in this way at home, in the street, or at play; but there is no reason why the teacher should not provide practice in discriminating colours, musical notes, etc. It is easy to conduct such work in a pleasurable way. Shades of colour may be graded in the order of lightness and darkness, or may be matched with similar shades. Notes may be struck upon the piano, and the children asked to determine which is the higher or the lower. Such training is essential only in the

case of mental defectives, although not undesirable even for the average child.

The tendency of children to respond to sensory stimuli makes it desirable that the teacher should cultivate variety of tone, manner and action. The ideal teacher of little ones is something of an actor or actress. Monotony provides no stimulus, and the children turn from the monotonous teacher to react upon foreign stimuli, such as the movements of another child, or else react as their own feelings prompt them, merely because no other reaction has been evoked.

The Use of Association

A third instinctive tendency of great importance in the conduct of the lesson is that of associating objects perceived at the same time, to which allusion has already been made in another connection. There is nothing more characteristic of the mind than its synthetic activity. Our minds are constantly employed in combining sensations. It is thus that we learn to know objects. For example, we combine certain sensations of sight, touch, taste and smell, and perceive an apple. Even when the apple is absent, we retain the power of forming a mental image of an apple. We may also form a general idea or concept of an apple, without recalling a definite mental image. Thus the mind is busy, not only in associating objects present to the senses, but also in combining and rearranging mental images and ideas. Generally speaking, our thoughts move onward by a process of association. One idea suggests another by virtue of a common element. A boy thinks of a certain cricket match, and this suggests a certain player who belongs to another school, so that presently the boy finds himself wondering if he would like to be a pupil there. It is evident that the use and guidance of the principle of association is one of the essentials of teaching.

Naturally, the wise teacher will prefer concrete to abstract associations. Without a groundwork of perception through the senses, the ideas of a pupil may hang in mid-air. Many

educated adults suffer from the want of sensory experience. Ask twenty people at random what is jute or what is terra-cotta, and the deficiency will be readily appreciated. Consequently, it is rightly urged that education should proceed from the concrete to the abstract. Let general ideas be founded upon direct and careful observation. The teacher of an advanced class is under the same obligation as the teacher in a sub-primary department to respect the principle of association. Not only objects, but even general ideas, need to be linked and cross-linked together. Otherwise the mind will not easily retain or reproduce such ideas. Hence the necessity of continuity in instruction, for one idea is not naturally followed by another unless the two contain a common element. Pieces of information given out at random, without connection, are unlikely to be retained by the minds of pupils. Some teachers needlessly interrupt the flow of association by incessant orders and comments. Such interruptions, although sometimes unavoidable, are in themselves undesirable. The ideal lesson, if it could be given, would proceed from one idea to another in such a way that the connection would be appreciated by the pupils. The older the latter may be, the less is the teacher able to proceed by providing sensory stimulation, and the more is he thrown back upon the principle of association. The more recently, the more vividly, and the more frequently an association is formed, the greater is the likelihood of its retention and of its subsequent reproduction. For example, if the pupil is to associate nine twelves with 108, he will do so the better if the equation has been made recently, if it has been vividly illustrated, and if it has been frequently repeated.

Interest

The association of things simultaneously perceived, and the association of ideas which contain a common element, are accompanied by a feeling which is generally pleasurable, and which is called interest. This feeling of interest may be produced by an effort of will, or may come about without

effort. The power to interest oneself in any branch of study by an effort of will is of great value, but is scarcely possessed by some children. The old idea of education was to develop this power by exercising the child's mind in work of a naturally uninteresting kind, such as the memorization of declensions or of lists of facts. The result, upon the whole, was disappointing. Pupils acquired a dislike of lessons, did as little as they could, were subjected to frequent punishment, and abandoned the study of school subjects as soon as possible. Interest produced naturally, without effort of will, is the surest indication to the teacher that his lesson is proceeding satisfactorily. In general, interest arises when the instinctive tendencies of the mind are respected. It should be observed that an object is interesting chiefly when it contains something that is old, and at the same time something that is new. What is entirely strange, or entirely familiar, is of less interest. The child who knows nothing of machinery is less likely to be interested in an engine than the child who knows something. On the other hand, the child who has won a complete mastery of multiplication is less interested in this work than the child who has but partly mastered the operation. It follows that novel facts and novel processes should be approached gradually in order that what has been already presented may form the foundation of what is next to come.

Curiosity

It is fortunate for the teacher that curiosity should be one of the instinctive tendencies of the child. Curiosity is an original trait of human nature, and may lead, under the teacher's direction, to active, spontaneous interest in lessons. In nature study and science, curiosity is invaluable. Obviously it carries with it the possibilities of danger. The too curious child investigates a bottle of nitric acid at his peril. Even so, no teacher desires to have pupils devoid of curiosity. Devices for utilizing the trait may be multiplied. Thus, at the opening of a picture talk the selected picture may remain veiled, while the eagerness of the children to perceive it, as

well as their creative imagination, is being aroused. Again, in all experimental work the mind is influenced more durably if it be curious as to the outcome. The delight of the scientist or of the inventor in his work is founded chiefly upon the instinct of curiosity.

Imitation

Another instinctive tendency of value to the conduct of the lesson is imitation. The general tendency of the mind, as has been pointed out in this chapter, is to respond to every kind of stimulus which affects the senses, but there seems to be a special tendency to respond to suggestions furnished by other people. Very often, although not invariably, response to suggestion takes the form of imitation. On Tenth Avenue, New York, the writer once observed a mother with her skirts drawn aside to avoid the slush which lay upon the pavement. By her side walked a little daughter wearing very short skirts, which were in no danger of contact with the slush, yet drawing her skirts aside in unconscious imitation. The incident may serve to remind the teacher of the enormous influence of imitation upon his class. His own dress, deportment, manner, and especially his speech, have a distinct influence upon his pupils. The literary style, even of adults, is affected by the books which they read. Cases are not unknown in which tales of pirates or of bush-rangers, or cinematographic pictures illustrating lawless deeds, have led the young to imitation culminating in crime. Probably there is no profession, not even that of the clergy, which is imitated to as great an extent as that of the teacher. Children imitate not only their teacher, but their fellows. An unruly boy, or a slovenly girl, may exercise the most detrimental influence upon the class. The teacher should endeavour to provide models of such excellence in reading, writing, note-books, speech, manners, discipline, the appearance of the schoolroom, and his own person, that the imitative instinct may become one of his strongest allies. What is called 'school tone' depends partly upon imitation. While it is not to be desired that imitation should be carried to such

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an extent as to impair originality, it is generally the case that originality should not replace imitation, but rather supplement it. Before we attempt to improve upon manners, conventions, habits, customs, or theories, we should first know and master those which exist. Yet, since originality is rarer than imitation, the former quality should be encouraged, except when specifically harmful in its manifestations.

Imitation is the chief reliance of the teacher in socializing the child, or in inducing him to conform to the standard of civilization. It produces a uniformity of conduct which is sometimes tiresome, but extremely convenient, and on occasion indispensable. We wash, shave, dress, eat, clean our teeth, and keep house largely by imitation. Sometimes the imitation may not be direct, but results from the fact that a person is placed in such a position that he is obliged to act as other people do. We imitate other people in withdrawing money from a bank, not instinctively, but because we cannot get the money in any other way. The teacher wisely places his pupils in situations which admit of only one ready solution, namely, that which he desires. He does not say, 'You must get your sum right, like John;' but, 'You may read when your sum is right.' The manipulation of circumstances, so that pupils naturally do the right thing, becomes an important element of the teacher's art. If he requires his pupils to do a certain thing in a certain way, he should see that they cannot achieve their end by other means. If books are to be handed in at a certain time to be marked, it should be understood that the marks are not otherwise obtainable. If a class is ordered to stand, the boy who rises too slowly has forfeited his right to go out with the others. Thus, by direct and indirect imitation, the class becomes a disciplined social unit.

Manipulation

Another valuable instinctive tendency is that of manipulation, including both construction and destruction. The latter is, perhaps, more interesting than useful to the teacher. A young child loves to knock down a pile of blocks, to jump

upon a 'castle' of sand, or to tear the leaves of a book. Even an adult, if there were no reasons to the contrary, would enjoy the act of smashing a glass window. The real pleasure in destruction seems to lie in the impression made by one's own efforts upon objects. Pleasure of the same character, fortunately, is to be found in construction. The teacher will endeavour to explain the mischief which attends destruction, and to substitute opportunities for construction. Ideas of form, number, etc., may be conveyed to children by the use of blocks for building. The Froebelian gifts afford abundant opportunities to the manipulative instinct. The ball is a constant delight, and offers ample means of sense co-ordination, especially in games. The tablets, etc., may be utilized in a variety of ways, especially in constructive forms. Chalk, pencil, and brush delight children by their constructive possibilities. Indeed, there are few pleasures as pure and as universal as that of creating, or, rather, that of transforming, objects. Who does not take a pride in making his own bookshelves or in transforming a neglected patch of soil into green lawn or beautiful garden? Manual work in the schools has always been a popular subject, chiefly on account of the facilities which it offers for transforming crude materials into ideal forms. This, in fact, is the essential nature of industry. The satisfaction of the industrial worker in his calling depends upon the integrity of his constructive instinct. The teacher may be advised to let slip no opportunity of utilizing the children's love of construction. In connection with geography, let them draw as many 'special purpose' maps as possible; in connection with number, let them use concrete materials; in connection with history, let them dress dolls in characteristic costume; in connection with science, let them put together their own apparatus; in connection with industry, let them construct models; in connection with English, let them compose efforts of their own; in connection with mathematics, let them make cardboard models; in connection with the study of nature, let them draw or paint. The value of human beings to the work of

the world lies not in what they may have absorbed, but in what they are able to construct.

Expression

Construction and destruction may be regarded as specialized forms of the general instinctive tendency towards self-expression. All life, animal as well as human, has an innate tendency to express itself in action. Every stimulus from the outer world tends to lead to a reaction on the part of the self, and without such reaction there can be no development. Hence it is frequently said that there should be no impression without expression. Expression involves movement of some kind, and it is this movement which, more than any other factor, leads us to master and to remember our experiences. With human beings the most common and frequent form of expression is language. The school is profoundly concerned with language, both oral and written. Indeed, it was the invention of writing which first made schools indispensable. Writing, with its correlative reading, could not be mastered incidentally and without schooling, so that it may be said truly that writing begat schools. In conducting a lesson it must not be forgotten that children have a natural right to express themselves, and that expression by the teacher is no substitute for expression by the pupils. This has already been pointed out in our discussion of the instinctive tendency towards bodily movement. The mind is even more active by nature than the body, and to impede the expression of mental activity is to check education itself.

When young children receive a mental impression they feel the need of an almost instantaneous expression. The older the pupil the greater the power of deferring expression. But even with adults the fact remains that an impression not followed by expression is easily lost. Thus, a lesson should never be conducted in such a way as to afford no opportunity to pupils of setting forth their own ideas. In sub-primary work, where children do not hesitate to attempt impossibilities, many lessons find their expression in drawing. For

example, the children, having been told the story of Red Riding Hood, draw what they can remember of the lesson. Of all school work, however, at least one form of expression may and should be an integral part. It is always possible to arrange for children to express themselves orally, especially at the commencement and towards the conclusion of a lesson. At the beginning, as a rule, they should be allowed to state what they know upon the subject; and, at the end, they should be required to state what they have learned. This plan provides not only opportunities of expression, but also a test of progress. There is little danger that time may be lost in listening to the voices of pupils. In practice, the danger lies in the opposite direction, for the idea that time not spent in instruction is time lost may be described as the fundamental pedagogic fallacy.

It need scarcely be said that the expression of pupils should not be limited to the reproduction of what they have learned. On the contrary, such a limitation may be fatal to originality. Nobody knows in how many cases the schoolmaster has stifled native genius. Hence, as far as possible, he should be tolerant of originality of expression. Children should not be dubbed foolish, or be otherwise discouraged, because their points of view may differ from that of the teacher. They should frequently be allowed to choose their own work. They may select their own subjects for drawing, painting, and even English composition. Their creative imagination should be encouraged. If capable of doing so, they may tell or write their own stories. If they show a marked preference for certain kinds of expression, whether artistic, mathematical, literary, or what not, the teacher should be tolerant of their likes and dislikes, although he may not feel justified in subordinating the curriculum beyond a certain point to the tastes of an individual pupil. In general, the teacher will remember that there is no other way of developing mental power and moral character than by self-expression. A few youthful natures, however, like that of Joan of Arc, express themselves to themselves, and grow in silence.

Gregariousness

Further, in the conduct of the lesson the instinctive tendency of children to group themselves together should not be disregarded. Some teachers, forgetting this natural gregariousness, expect children to be oblivious of one another's presence, and to attend only to the teacher. A wiser plan is to make use of the group instinct. In some schools, permanent groups are organized, each containing members of several classes, with certain monitors or prefects responsible for the games and the general well-being of each group. Even in the classroom it is often effective to arrange the class into groups for practice in school work, as, for example, in oral reading. One pupil in each group may hear the others read and should correct their errors, so that there may be four or five reading at the same time, the teacher exercising only a general supervision. In work such as drawing, an expert pupil may be set to assist others, provided that his own progress be not neglected. Groups with an unruly tendency sometimes form themselves, and should be broken up. The seating of the class should be carefully studied, and when necessary should be rearranged by the teacher. Groups of advanced pupils may be permitted to work out geometrical or other problems in co-operation, preferably at the black-board. *Esprit de corps* should be encouraged, and the class should learn to regard itself as a unit, although subordinate to the school as a whole. The bully should be belittled, and the shy or retiring child should sometimes be given a position of honour. The class, and the school, should pride itself upon its tone and conduct. In some schools, practical self-government is granted to the pupils, and, if the teacher be tactful, is seldom abused. Above all, in conducting a lesson the teacher should never alienate the group spirit. In matters of discipline he should be careful to see that the opinion of the class as a whole is upon his side. If it be not so, he may be sure that there is something wanting in himself, and should take deliberate pains to enlist the goodwill of the group. It may be taken for granted that the class, as

a whole, is not corrupt; general fault-finding is most objectionable. As a rule, indeed, the work should proceed with the evident appreciation of the 'class mind'. To be impatient or unreasonable arouses a sense of injustice, and causes the class to regard the teacher as an enemy, against whom all tricks, pranks and wiles are permissible, not to say praiseworthy.

Play

Closely connected with the natural tendency of children to form themselves into groups are the equally instinctive activities of play, sympathy and love. The former is important, not merely out of school hours, but in the conduct of lessons. Even among the ancient Greeks the use of play in such work as spelling and arithmetic was understood. Spelling and number games are chiefly confined to sub-primary work, but the teacher's ingenuity may be well applied in extending their use to primary classes. The play spirit, that is to say, the derivation of satisfaction from the immediate activity in hand, should at all costs be preserved. The best worker derives a pleasure, not merely from some distant and external reward, but from the process itself in which he is engaged. The teacher who endeavours to lead his pupils to their work in this spirit will be astonished at the measure of his success and at the possibilities which are unfolded before him. The interest of a boy making a tray in the workshop should be as keen, intense, and alert as his attitude in playing cricket. The writer has seen children as excited over subtraction as they could have been over 'rounders'. No doubt if all the work were to be made equally exciting the strain would soon lie too heavily upon both teacher and pupil; but there is no school work which may not be made interesting, either in a greater or in a less degree.

Sympathy

The question of sympathy has been touched upon in our discussion of the group instinct. It is well, however, that

the teacher should realize the capacity of children to sympathize with the right and the good, in response to suitable suggestion. Artistic as well as moral sympathy may be evoked, provided that the teacher's presentation be not soulless. A beautiful picture, a poem, or a heroic action should be explained with tact and feeling. Above all, the pupils should recognize their teacher as a friend who is not by any means blind to their failings, but intent upon their good. Deep in the hearts of young children lies a capacity for affection, a sacred power of devotion, which it is the privilege of the home rather than of the school to cultivate. The teacher should console young children in their hurts and sorrows; and should remember that their confidence, if easily won, is as easily lost. With older children his attitude should be almost impersonal. Even the appearance of favouritism is to be avoided. During the lesson the least amiable pupil should receive as much consideration as his more lovable fellows. He should be asked as many questions, be given as much encouragement, and be invested with as many privileges.

Rivalry

At all times and in all places teachers have made use of the instinctive tendency known as rivalry. To each pupil has been held up the prospect of beating his fellows. In the early schools of the Jesuits the practice was that each boy should have an appointed rival of about his own ability and attainments, against whom he was constantly pitted. More recently, there has been a reaction against the spirit of competition; and some teachers have endeavoured to replace rivalry by sympathy and affection. Pupils, they argue, should aim at helping, rather than at defeating, their comrades. Rewards and prizes, they add, should be discontinued. The aim of the school should not be superiority, but service. It cannot be doubted, indeed, that schools of the older type sacrificed the idea of social service to that of individual excellence. On the other hand, there is no

necessity for allowing rivalry to degenerate into envy, hatred and malice. The kind of rivalry which a teacher should evoke is that which is often seen on the sports-ground, and sometimes on the field of battle. It is rivalry tempered with respect and generosity. It is chivalrous rivalry, the recognition of a foeman worthy of one's steel. It is the kind of rivalry which seeks to excel, but not to humiliate. That children are capable of such rivalry is certain; but the actual character of competition for marks, prizes, or other privileges will depend upon the amount of tact shown by the teacher. It rests within his power to suggest either nobility or baseness. Although rivalry is only one of the many springs of action to which the teacher may appeal, it has this advantage, that it may be evoked readily, and in connection with every phase of school work. The conditions are almost always present, since the ambition to excel is almost universal among children, and since almost every child can be paired with another approximately of his own standard. While other springs of action, such as constructiveness, may require the presence of apparatus, or, as in the case of affection, may distract a child from his work, rivalry, like curiosity, induces concentration upon the subject in hand.

In conducting a lesson, therefore, many good teachers make use of wholesome rivalry. The plan by which children are allotted seats in accordance with their marks for the week has much to recommend it. Effective lessons may be given occasionally on the 'stand round' plan, each child who answers a question moving above those who failed. This device gives ample scope for physical movement, and relief from sitting, but should not extend over more than twenty minutes at a time. In some subjects at least a regular scheme of marks should be maintained. Mindful of his own feelings as a boy, the writer favours the award of prizes, but on such terms that some prize at least should be open to the duller children. From this standpoint, prizes for the greatest improvement in a subject are preferable to prizes for absolute merit.

Fear

The last instinctive tendency of significance to the conduct of the lesson is fear. This topic belongs chiefly to the discussion of discipline, but it may not be amiss to indicate that teaching cannot thrive in an atmosphere of terror. The pupils should respect rather than fear their teacher, who should be watchful in checking undue familiarity, as well as the disconcerting tendency to take advantage of any weakness in his character which is generally to be observed among intelligent pupils. The biological use of fear is that it tends to cause living beings to avoid objects or situations dangerous to life. This use is more in evidence out of school than in the classroom, where fear is not merely no help, but a positive hindrance to education. How many pupils have failed in their school work by reason of the fact that they could not concentrate attention upon it, on account of the ever-present threat of punishment! Let the lesson be conducted upon a footing of reasonable equality, since children are sufficiently rational and intelligent to deal effectively with data that lie within their powers of comprehension.

CHAPTER IV

VARIETIES OF PROCEDURE AND TYPES OF LESSONS

Types of Teaching

SINCE the mind works essentially according to two principles, (1) response to an external stimulus, and (2) response to an internal stimulus, the process generally known as association of ideas, it follows that there should be two types of teaching and of teacher, (1) the stimulative, and (2) the associative or reflective. In general, both these types will be found combined in a single personality, but in varying proportion. In order to illustrate the distinction, let us briefly consider the contrasting characteristics and methods of two teachers who may be conceived to represent the respective types in a somewhat extreme form.

The Stimulative Teacher

There is firstly the stimulative, who is also a stimulating teacher. He is an actor, a man of infinite variety, who relies chiefly upon the presentation of a succession of forceful, vivid, ever-changing stimuli to produce his effects. Chief among these are the concrete suggestions which radiate from his own person. He is erect, vigorous, alert, sanguine, vivacious, at times impressive, at other times jocular in his manner, unsparing of the calls which he makes upon his own mental and physical energy, generally brisk and smart in his movements, and capable of playing a variety of parts with such conviction that not infrequently he may be prone to deceive himself. He is the idol of his class and of his school. In the playground he joins in games, and exercises therein a natural and unresented leadership. By manifold variations of manner, voice and tone he dispels lethargy and fascinates attention. He talks, gesticulates, mimics, reads, recites, sings, dramatizes, shows many pictures and objects, raps the desk and at all times urges his class to

maintain at least an appearance of lively attention and mental and physical briskness. His work glows with warmth, stir and power. Arms leap almost from their sockets to meet his questions. He takes his class for lessons and excursions in the open playground or field. At the end of the day both he and his pupils feel that they have done a good day's work, and are excusably tired. He continually urges his class to think, but is too restless to allow them much time for quiet study or for reflection. His eagerness to reach the goal is freely imparted to his pupils, who delight in the disciplined movement which he encourages, and tend to regard him as an ideal teacher. His work is thoroughly prepared, and he is a master of mechanical technique, versed in one or two fundamental principles, though somewhat contemptuous of theory as such, and no philosopher. He reveals himself at his best with young children. In spite of all his preparation, his teaching sometimes lacks continuity. Such a teacher was the great and talented Heinrich Pestalozzi.

The Reflective Teacher

On the other hand there is the associative teacher, calm, quiet, reflective, inclined at his worst to appear indifferent and monotonous, but the appearance is deceptive. Showing little activity himself, he yet knows how to evoke mental if not physical activity on the part of his pupils. His disposition is melancholic, his thoughts philosophical and logically ordered. His method is not ostentatious; and he shrinks from affectation almost to a fault. During his exposition of a subject some of the pupils may evince a disposition to go to sleep, but those who remain wide awake, learn. He is at his best with older pupils, and then not perhaps in descriptive geography, music or poetry, subjects which lend themselves in some degree to histrionic treatment, but in science, mathematics and art. His strength lies in combining known ideas with unknown; and in affording to his pupils ample time and opportunity to think and to study out their own problems. Locke and Herbart belonged to this class of

teacher. Nobody, fortunately, is constrained to adhere closely to one of these types. Rather should every teacher endeavour to alternate association with stimulus. Preferably, shorter periods of concentrated activity should be employed in order to vary longer periods of continuous and associated thinking. Between a number of lengthy and eloquent sentences, such an orator as Cicero was wont to introduce a sharp, stimulating 'Quid?'. The monosyllable, one may imagine, rang out like the crack of a whip. It had no significance beyond that of providing needful stimulus; the orator just turned the 'quid' in his mouth, and went on. But who knew better than Cicero how to hold the attention of an uncultured audience? In the matter of exposition, the teacher cannot afford to neglect the lesson of so consummate an artist.

Varieties of Lessons

It is not customary to divide lesson periods into the stimulative and associative types. Indeed, for the purpose of planning lessons another method of classification may be regarded as preferable, since no lesson, unless it be reduced to the process of passive receptivity with which one watches a moving picture, should consist of a series of sensations and percepts; nor, on the other hand, should any be woven entirely of abstract associations, with the doubtful exception of a lesson in algebra. But lessons may be organized in accordance with the character of the mental elements which are expected to predominate in them. Three such elements, familiar to all students of psychology, are knowing, feeling and striving. While none of these phases can ever be entirely absent from any state of consciousness, yet it is clear that in a given lesson either the cognitive, the affective or the conative element may predominate. A lesson in history is likely to be mainly informative, a lesson in poetry mainly affective, and a lesson in manual work mainly active. Upon the ground cleared by this distinction a practical foundation for the different types of teaching procedure may be established. Some lessons then are informative, others

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affective, others practical. There are also many lessons in which one particular unit is informative and another practical or in which other psychological alternations are deliberately effected; but such combinations must needs be left to the individual discretion of the teacher. Let it suffice to indicate that the unit of teaching procedure may not be the whole lesson, but a part of it.

Example of Informative Technique

In the lesson outlined below, the problem which confronted the teacher was how to connect arithmetical calculations with the generalized forms or symbols of algebra. The main idea which the teacher desired the pupils to grasp was that algebraic symbols are general expressions of groups of ideas, that they constitute as it were the shorthand of algebra.

The teacher began his lesson by a very brief revision of the method of adding. He then wrote on the board the following question:

$$5 \text{ apples} + 4 \text{ apples} = (\text{what?})$$

The answer was given by one of the pupils; and the teacher proceeded to write it on the board thus:

$$5 \text{ apples} + 4 \text{ apples} = 9 \text{ apples.}$$

Since the pupils had previously answered similar questions, the teacher asked them how they had obtained the answer, '9 apples'. He eventually received the required answer: 'Add the numerical coefficients and call them apples.'

The teacher then wrote on the board:

$$5 \text{ apples} + 2 \text{ pears} + 4 \text{ apples} + 3 \text{ pears} = (?)$$

and received the answer:

$$9 \text{ apples and } 5 \text{ pears.}$$

Having inquired how this answer had been obtained, he was told that the numerical coefficients of like things had been added, and the names of the things indicated.

The teacher then said: 'Instead of writing the whole word, let us merely set down the initial letter, so that 5 apples +

4 apples = 9 apples, becomes $5a + 4a = 9a$. Now, considering this last statement, how have we reached the answer, $9a$?

He was given the same reply as before: 'Add the numerical coefficients and write "a" after the result.'

Going on to the second step in this lesson, the teacher replaced the answer to his second question, 9 apples and 5 pears, by $9a + 5p$. He was again informed that this answer might be obtained by adding the numerical coefficients of like things and placing the names of the things after the result.

The teacher then gave the pupils various examples to answer orally. These were very simple, and involved symbols instead of words:

$$3a + 2a = ?$$

$$5a + 9a = ?$$

and later, $3a + 7b + 11a + 9b = ?$, etc.

Whenever the boys gave their answers they were required to explain how they had obtained them.

After several varied examples which gradually became harder and more complicated, the pupils were referred to the text-book and required to work certain problems. Boys who failed in any of these were brought out to the black-board, and while the others were acquiring further practice, these boys threshed out the method in accordance with the principles which had been laid down. This procedure was continued, until all had become proficient. Then the pupils were set further problems of increasing difficulty.

Example of Affective Technique

The following treatment of an episode in *A Tale of Two Cities* may be cited as an instance of affective technique.

A Tale of Two Cities is one of those rare novels which is remembered as one complete story. It is hard, therefore, to imagine a teacher selecting this book as a means of giving a lesson in English literature, to be compassed in the comparatively small space of one half-hour. This, however, was

done with enviable skill by a teacher whose procedure in securing taste and appreciation is described below.

The teacher had selected as the subject of the lesson the chapter in *A Tale of Two Cities* which she regarded as most characteristic of the art of Dickens—'The Taking of the Bastille.' This chapter comes as a climax to the historical scenes in the background. The children had read the chapter at home on the previous evening.

On her part the teacher had made her own preparations for arranging the lesson in the form of a one-act play. The act was divided into about ten scenes. This scheme had been outlined in advance on the board, so that undivided attention might be given to the actual text with its thrilling interest. The teacher then, before instituting her dramatic plan, led the class through a quick, brief revision of what had happened, noting 'who was who in the story' up to this point. The review was effected by quick questioning, and in order to avoid delay the teacher would sometimes pick up the thread and go on with it herself. This step took perhaps five or six minutes, and served as an excellent introduction as well as a particularly stimulating 'warming-up.'

Then the drama began. The teacher, it was obvious, had spent long hours in choosing the most relevant episodes in the chapter for the various scenes. The incidents which the teacher intended for the first scene were selected in part by the children. Then the teacher went over this scene in such a way as to make the children realize what dramatic possibilities the action really had, without making any strenuous demand upon their imagination. Each scene was dealt with; but no monotony ensued. Sometimes the children gave the information, sometimes the teacher; sometimes the children realized the dramatic possibilities of the scene, sometimes they subordinated its content to the next scene following. If this scene happened to be one of quick, sudden movements, the teacher by her method, her manner of speaking, her very gestures, made the class realize the critical

and hurried quality of the action. Her enthusiasm waxed stronger as the scenes became tenser. As the mobs surged through the Bastille like madmen, the courage, almost the 'brazenness' of Madame Defarge was portrayed, was made real. The last scene—the end of the chapter—was most touching. The teacher took it herself for the greater part, showing to the children its real significance. This lesson ended right on time; but such an ending! The teacher had selected the words of an appropriate poem, and with these she closed the work. When she uttered the lines in her impressive way, giving an exquisite rendering of true sentiment, a deep breath was taken by all, as if to say: 'It is all over—wasn't it wonderful?'

Example of Practical Technique

In the lesson founded on *A Tale of Two Cities*, while the main aim of the teacher was to secure appreciation, an element of action was introduced by the adoption of a scheme of dramatization. The following account of the technique of a writing lesson, in which the group of letters *n*, *m*, *v*, and *r* was isolated for purposes of improvement and practice, is wholly an illustration of active or practical teaching.

The teacher introduced the lesson by demonstrating on the blackboard the common stem of a group of letters *n*, *m*, *v*, and *r*, taking first one preliminary curve with down stroke only, and afterwards a series of such curves and strokes, resembling several joined examples of the letter *m*. The pupils then did the work in their own books, making the strokes to the counting or timing of the teacher. This was the most striking part of the lesson. By taking the average time occupied in writing a line of poetry with twenty letters, the score could easily be noted. A norm was established which gave the teacher a fairly accurate idea of the speed which should accompany good work. Such a norm or measure was applied by the teacher at first with repeated reference to a watch, and afterwards without. It was remark-

able to notice how well the timing can be done by judgment alone as the result of a little practice.

After the stem part of the group had been practised, a particular letter was taken, *n*. A line consisting of twenty *ns* was completed to timing. Then the boys were given an opportunity of writing at their own rate. Another letter of the group was taken, the class commencing at a slow rate and accelerating until the average speed had been reached. When each letter had been dealt with in one of these ways, several were combined to form words such as *mum*, *nun*, *minim*, *murmur*. The writing of these words was not timed; they were written at the pupils' own rate.

Next came a pleasing feature of the lesson. Some amount of demonstration, as indicated at the outset, had been done on the blackboard. The teacher encouraged the boys to criticize his faults, indicating each one with a coloured cross or arrow. When every mistake such as slope and height had been marked, the boys had to repeat the process in respect of their own work.

Such a treatment of a group of letters, occupying no more than fifteen minutes in all, is calculated to effect a definite improvement in handwriting.

Subdivision of Informative Lessons

Lessons of the informative type fall into three main classes:

- (a) those in which the teacher conveys the information to the pupil,
- (b) those in which the pupil gathers the information for himself, and
- (c) those in which the information proceeds from intercourse between the pupil and the teacher.

(a) *Instruction*.—Lessons of the first type are more widely employed in Europe than in America, where the typical lesson, under the name of *recitation*, is one in which the pupil is catechized upon the material which has previously

been assigned to him for study. But few will dispute that there are many lessons in which the fountain of information should be the teacher rather than the text-book. These may be divided into several sub-types, each of which lends itself to a variation in technique—the expository, the narrative, the explanatory varieties, all of which may be grouped together as instructive. An expository lesson tends to exercise the pupil in intelligent memory, a narrative lesson in imagination, an explanatory lesson in the relation of cause and effect.

(b) *Self-teaching*.—Apart from such instructive types of lessons as have been indicated by the terms exposition, narration, and explanation, there remains the acquisitive type of information lesson, in which the pupil is required to obtain information for himself. Under the Dalton plan, which is better adapted to secondary than to primary schools, this type of school work predominates; and under any plan of instruction it should have its allotted place. Lessons or units of lessons in the course of which the pupil acquires his own information may be divided into five sub-types, suggested by the terms experience, observation, imagination, experiment, and study. To illustrate what is meant by learning from experience, it may be mentioned that Montessori gives the young child a piece of 'didactic apparatus to play with, and lets him learn by experience how to manipulate it to advantage. In nature study, children should learn chiefly from their own observation. In imaginative composition or original design, their own imagination is their teacher. In science, experience is regulated, controlled and directed in such a way as to constitute what is known as experiment. In fulfilling assignments from books the pupil gains his information by study. In all such lessons the essential process is self-education.

(c) *Information Through Intercourse*.—There is a cognitive type of lesson in which neither does the teacher convey instruction directly, nor does the pupil directly acquire

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it. This may be termed the 'intercourse' lesson. It includes conversation, as when pupils and teachers engage in free discussion; argument, as when the lesson takes the form of a debate; deduction, as in Euclidean geometry; induction, as when the children examine words and draw their own grammatical inferences; and dramatization.

Affective Lessons

In respect of affective and practical lessons, it is unnecessary to discriminate between as many varieties as have been suggested in our treatment of information. An affective lesson may aim at the cultivation of taste or appreciation, as in the examination of a picture, a poem or a piece of literary prose; or at the inculcation of a sentiment, such as patriotism or kindness to animals; or at arousing the emotions with a view to satisfying and purifying them, which is the main object of tragic drama and of religious revivals. But some emotions are too delicate and too sacred to be played upon by the teacher's hand.

Practical Lessons

Lessons which mainly involve action fall into two types, those in which the action is expressive, illustrative or intended to stimulate thought; and those in which it should be reduced to the mechanical plane of habit and skill. Modelling in sand, dramatizing a story, or constructing a medieval castle in the playground, are practical lessons of the expressive, illustrative and thought-provoking type; while handwriting, drawing and manual work involve practical lessons in which the aim is to impart a greater or less degree of habitual proficiency. A single action may be sufficient for expression; repeated action is necessary for skill.

The following diagram is intended to express the relation of all the types and sub-types of lessons and units of teaching procedure which have been suggested in this chapter. As far as possible, overlapping has been avoided. The principle of classification is as strictly psychological as possible.

TYPES
OF
LESSONS

I. Informative Lessons	A. Instruction	<ol style="list-style-type: none"> 1. Exposition 2. Narration 3. Explanation
	B. Acquisition or Self-Education	<ol style="list-style-type: none"> 1. Experience 2. Observation 3. Imagination 4. Experiment 5. Study
	C. Mutual Education or Intercourse	<ol style="list-style-type: none"> 1. Conversation 2. Argument 3. Deduction 4. Induction 5. Dramatization
II. Affective Lessons	A. Taste	
	B. Sentiment	
	C. Emotion	
III. Active or Practical Lessons	A. Practical Expression	
	B. Skill	
IV. Mixed Lessons, in which the teacher combines several of the types of teaching, such as exposition and narration, at his discretion.		

Naturally, there are other principles which may be applied to the classification of lesson-types. Thus lessons may be (a) stimulative or (b) associative; (a) expressive or (b) impressive; (a) new or (b) revisory; (a) first treatment or (b) second treatment, etc. But the classification tabulated above is more detailed, and will be found more useful in practice than any of these alternative schemes.

CHAPTER V
THE INFORMATIVE LESSON
A. INSTRUCTION

The Value of Continuity in Instruction

OUR mental life is ineffective unless its processes are closely and vitally bound together. The tide of a river tells us little of what lies behind or before; but the stream of thought is formed and fashioned by preceding thoughts, at the same time that it helps to determine our attitude towards new situations as they arise. It is safe to predict that a proposal to reduce the hours of labour will arouse different thoughts in the minds of employers and employees, not merely on account of divergence of interests, but because the systems of thought already dominant in their minds are different and cannot but affect the origin and development of any new thought. Every state of mind has its roots in previous states. Two classes of students, in America and Australia respectively, were asked by the writer to note the first association that came into their minds on hearing a certain word—*bat*. In the one case the great majority thought of the animal, in the other case of a ball, probably because the association of bat and ball occurs with even greater regularity in the mind of the Australian youth than in the experience of young Americans. Again, in each case all who associated 'bat' with the animal were girls, apparently because the thoughts of girls have in the past dwelt upon the animal bat as a thing that might conceivably become entangled with their hair. Boys, having seldom given the animal a thought, do not primarily associate 'bat' with a living creature.

The chief function of an idea, next to its value to determine one's action in a given set of circumstances, is to assist in moulding one's future thoughts. It follows that a waste of educational possibilities takes place whenever thoughts are instilled into the minds of pupils in such isolation that

they neither become associated with what is already known nor survive to influence future ideas. He who has not been the victim of an intellectual hodge-podge of this kind, the prey of scattered dates in history, the sport of sporadic facts in geography, has been fortunate indeed in his schoolmasters. It is a skilful teacher who regards the principle of continuity in all his instruction. If some of his pupils continue to be scatter-brained, it will not be because they have been denied the advantage of steady and persistent exercise of thought along definite lines, but because their limitations have prevented them from realizing the opportunity that was theirs.

1. *Exposition*

It is only by accident that a lesson given extempore has any professional merit; and either full or abbreviated preparation should be made by the teacher for every school period. The time at the teacher's disposal is so limited, however, that in a great number of lessons a formal series of steps may be adopted with advantage. Those generally utilized for purposes of exposition are founded upon an analysis made by Herbart. The Herbartian steps, however, represent a peculiar point of view, the point of view from which the teacher is regarded as the core and centre of the process of education, so that every step proceeds from and returns to him. Accordingly, while the Herbartian steps may be profitably applied to the organization of many lessons, in general something like the following alternative scheme is to be preferred:—

(a) Motivation.

(b) Exposition or presentation $\left\{ \begin{array}{l} \text{(i) by pupils;} \\ \text{(ii) by the teacher.} \end{array} \right.$

(c) Illustration $\left\{ \begin{array}{l} \text{(i) by the teacher;} \\ \text{(ii) by pupils.} \end{array} \right.$

(d) Formulation $\left\{ \begin{array}{l} \text{(i) generalization;} \\ \text{(ii) review.} \end{array} \right.$

(e) Function.

(a) *Motivation*.—The substitution of the step of *motivation* for what is called by the Herbartians 'preparation' involves a radical reform. Behind the Herbartian step is the conception that interest is the mechanical result of bringing certain ideas into the mental foreground. From the Herbartian point of view, if the teacher by asking a series of preliminary questions on Russia succeeds in getting the children to think about Russia, he has prepared their minds for a lesson in the geography of that country. The drawback to this kind of preparation is the want of a guarantee that the children will maintain their interest throughout the lesson. Their minds may have been prepared, their interest may have been aroused, but their deeper feelings have not been enlisted, nor have they been made conscious of a definite want or need of information about Russia. The pupils are tolerant of the instruction, mildly pleased to have been consulted in some way, yet they do not feel that Russia closely concerns them.

In *motivation*, not in so-called preparation, lies the secret of successful lesson-giving, for when the children can be induced to want certain information they will work to get it with as much enthusiasm and sincerity as an adult. Teachers should make themselves adepts in the cultivation of motive. It may be difficult to lead children to care for the geography of Russia, but a definite aim running through the whole lesson will do much to secure this result. Such an aim might be to discover how Russia has grown to her present vast dimensions from the comparatively small country of which, in 1689, Peter the Great became Czar. An alternative aim might be to account for Russia's weakness and defeat in the First World War and her peril and amazing triumph over Germany in the Second World War. A still more serviceable aim would be to discover Russia's object in opposing the policies of America and the Western European Powers, as expressed through the United Nations Organization. The aim, once adopted, should be sustained throughout the lesson.

(b) *Presentation*.—Presentation as a formal step in lesson-giving should consist of two well-marked parts, the former

being a statement of facts by the pupils based upon their interpretation of the matter which has just been studied and on their previous knowledge and experience, and the latter including all supplementary information which the teacher thinks ought to be adduced in order to amplify or to correct the exposition of the pupils. Exposition by the pupils has a number of advantages over exposition by the teacher. Firstly, the class will give closer attention to what a fellow-pupil has to say than to the teacher's words, and for two reasons—they enjoy the change of voice; and they want to see how Johnny gets on when asked to impart information. A second advantage of presentation by the pupil lies in the opportunity the teacher has to make an incidental test of the knowledge and mental calibre of individual children in his class. The boy who is asked to explain or to describe something is obliged to draw on his mental resources in a way that would be unnecessary if nothing more were to be demanded than the ordinary categorical answer to a definite and simple question. A third advantage of exposition by the pupil, instead of by the teacher, is that the former will be unlikely to fall into the commonest of errors in the presentation of facts, namely, talking over the listeners' heads. Against these considerations it is possible to urge that there are limits to the benefit of teaching through the mouths of pupils, since their knowledge is imperfect, powers of expression undeveloped, voices at times inaudible, judgments immature, and language not always desirable as a grammatical model. Yet the advantages of exposition by the pupils far outweigh the disadvantages. In the majority of lessons exposition by the teacher will continue to be an important factor, so long as pupils make mistakes to be corrected, omissions to be supplied, and floundering from which they need to be extricated.

(c) *Illustration*.—Illustration is begun as naturally by the teacher as exposition by the child. In the latter the child, having just finished a short period of study and being brimful of information, is ready and eager to impart what he

knows, and ought to be permitted to begin the process of exposition. In illustration, on the contrary, the child is seldom at home until the teacher has led the way, particularly where, as usually happens, the illustration deals with topics which are not yet clearly understood by the class.

The illustrations which may have been adduced by the pupils are not necessary to the mere understanding of the matter to be learned. Exposition and illustration by the teacher will have already made it quite intelligible. Why then should the pupils be asked to add illustrations of their own? Apart from the obvious answer that this is a convenient way of assisting them to think for themselves, there is the more important consideration that it is the only way of putting them in a position of genuine mastery of a piece of information. It was long ago pointed out by Aristotle that there is no small difference between the idea of the good as a possession and the idea of the good in use; and there is a similar difference between the mere comprehension of a piece of information and the faculty of using it.

It has been pointed out that there are times when what is logically speaking a mere illustration may be made to precede the material which is to be illustrated. In this connection, it should be pointed out that two kinds of illustration may be discriminated, to which the names intellectual and æsthetic may be conveniently applied. By an intellectual illustration is meant one whose object is to make a fact clear to the understanding; by an æsthetic illustration, one that is intended to induce a certain emotional state, or, as we often say, to create an impression. Illustrations provided in advance of the matter to be presented are usually of the æsthetic variety. Among such are the pictures one may show to a class before a certain reading-lesson is begun, or the photographs of scenery which are displayed on the walls of the classroom for some days prior to the geography lesson. Illustrations intended to point a moral are frequently of the type to which we have applied the general name æsthetic, since their primary appeal is to the feelings. Intellectual illus-

trations rarely precede the matter to be illustrated, although where the lesson may be abstract or difficult the reversal of the natural order is apt to be of advantage. The parables of the Gospels are examples of illustrations which are made to precede the principle to be illustrated. The educational advantage of using an æsthetic illustration before mentioning the circumstance to be illustrated lies essentially in the power of the anticipatory illustration to create a more intense interest, and to prepare the mind of a listener for the information that is to come.

In such an example as the following, the advantage of anticipatory illustration is apparent: 'Do you know how a wounded bird wobbles and wavers as it flies? That is the way the ship moved when her mast was carried away.' Accordingly, illustration, regarded as a step in procedure, may be transferred to the beginning of a lesson-period whenever the teacher's intention is to create an emotional impression.

Although, in some respects, 'illustration' may take the place of the Herbartian step of 'association', the two do not exactly correspond. The use of association is so general at every stage of a lesson that it ought not to be set apart as if confined to a specified period. Association is to be regarded as a vital factor in motivation and exposition as well as in illustration.

(d) *Formulation*.—After the information has been duly presented and illustrated, the teacher does well to *formulate* it in some convenient way. At this stage he should make out a blackboard scheme, although in cases where the continuity of the lesson does not suffer, the blackboard may be used at intervals throughout the lesson. As a rule, when deferred until the stage of formulation, the blackboard plan gains in unity and coherence more than it loses in spontaneity and freshness. It is not to be supposed that the formulation of the lesson is to be merely the teacher's work and not that of the pupils. Wherever generalizations are to be made, they are usually withheld until nearly the end of the period, in order that the pupils may have amassed sufficient data to

draw their own conclusions. The generalizations may be written upon the blackboard as the children formulate them. This part of the lesson, however, should include the revision and summary of a number of important facts not necessarily of the nature of generalizations. The formulation will be twofold. The step will cover, firstly, the general conclusions which the pupils have been helped to draw for themselves; and secondly, a summary and recapitulation of important features in such a way that they shall be seen in due relation and, as it were, in good perspective. The summary should be written, for preference, not in rough notes and jumbled phrases, but in good round English sentences which may repose in the pupils' note-books, to be consulted periodically as an aid to revision.

(e) *Function*.—The final step in a typical lesson, whose object is to give information of one kind or another, is that of applying the newly-won knowledge to some kind of use. The term 'application' might be retained, were its sense not ambiguous. Does it merely connote practical benefit, or does it include purpose of any kind? The word 'use' might serve were it not liable to a similar duality of interpretation. A better term than either to express what is intended is *function*. The pupils are now taken into the confidence of the teacher as to the functioning of their newly-acquired knowledge in a variety of situations, primarily in practical life, because practical life is more comprehensible to children than theory can ever be, but also in other branches of knowledge which come within the circle of schoolroom experience. It may be contended that since the function of the information itself provides a motive of study, the step of function should be transferred from the end of the lesson to the beginning, so as to coincide with the phase which we have described as 'motivation'. Seldom, however, does the function of any particular body of information furnish an adequate motive to the pupils for apprehending it. Frequently the most powerful motive will be found to lie outside the range of the most important function. For example, the most valu-

able function of a first lesson on Russia may be to cultivate a habit of sympathetic understanding, but a more efficient motive of study may be to prove or disprove the proposition that Russia is a good country in which to live.

Invariable Steps

(Of all the steps suggested above, only the first and last may be regarded as practically invariable. In no lesson should a teacher proceed until he has assured himself that the children have a *motive* for working. To the objection that in a series of lessons such as are commonly given in the teaching of writing or in the process of long division, a separate motive for each lesson ought not to be demanded, one reply is that where any of the lessons in such a series is motivated more explicitly than another, that lesson may be expected to be the best of the series. To the argument that one relatively permanent motive may be deemed sufficient for a whole series of lessons, it may be answered that the motive needs to be revived for each lesson, and that the revival of a motive is apt to be most efficient when the motive takes a modified form. To the statement that in many lessons the intrinsic interest of the material of study is sufficient to provide a motive for the work of the class, the rejoinder is that the teacher will still need to lay his plans wisely if he is to make the most of the alleged intrinsic interest. To the criticism that children ought to be taught to work without a particular motive for doing so, the answer, if an answer is needed, is that the teacher who would discover how to inculcate the lofty motive of working because work is right is likely to need to search his own spirit to some purpose. He still needs to follow the rule of deliberately preparing means by which to induce the motive. If it be suggested that the rule of motivation is capable of a *reductio ad absurdum*, since, for example, not only the drill lesson should be motivated, but also the response to each individual command in the drill lesson, the reply is that the introduction of a motive for the drill lesson is practicable, that of separate motives

for 'right turn' and 'left turn' impracticable. Motivation ought to be an indispensable element of all plans of lessons. The indication of the *function* of a lesson to the class, while neither as useful nor as imperative as the step of securing a motive, ought never to be impossible. If there is no satisfactory motive from which a class can act, something must be wrong with the action demanded; and where there is no function within the experience or the understanding of the pupils for a given fragment of knowledge, what is more probable than that the information offered is itself unsuitable?

2. *Narration*

While exposition remains the typical form of teaching, only next in consequence comes narration. In all societies and in all periods children have been introduced to ideas of life through the practice of story-telling. The stories told in school take many forms, fairy, romantic, historical, anecdotic, poetic and oratorical. It is possible to tell stories well by following closely the manner of their presentation in good literature; but some degree of critical attention should be given to the art of narration, which differs in several respects from conversational style. A story follows the order of events in time, but the interest cannot be delayed until the end. Interest should be well distributed; hence minor events in the story should be strong enough to be interesting themselves, yet not strong enough to interfere with the unity of the tale. Interest should increase gradually, through the expectation of a crisis not yet reached. A rapid movement fascinates children.

A story consists essentially of an introduction, a plot, a crisis and a *dénouement* or resolution of the crisis. The *introduction* should be brief, direct and free from superfluities. It should lead directly and naturally to the matter of the tale, like the bud to the flower. Long preambles must be avoided, and sometimes the introduction may be compressed into a single sentence, more often into a paragraph. In the course of the plot, the interest accelerates, and com-

plications arise in connection with persons and events. For children especially, these complications must be presented in such a way that no obscurity shall be involved. As in the *Three Little Pigs*, the children's classic, repetition of the theme with unexpected variation never fails of its appeal. The *crisis* is the point at which the complications are most overpowering, the resolution imminent but not yet evident. Interest becomes acute, but the issue remains obscure. The *dénouement*, the resolution of the plot to which all else leads up, although not obviously, concludes the story. It should be unguessable and unforgettable, as when the fox, on descending the chimney, falls into the boiling pot, to be cooked and eaten by the lone survivor of the little pigs.

At the beginning all should be quiet, and to enjoy the thrill of the social mind the children may be grouped together on the floor at the feet of the teacher, sitting calmly on his chair. An atmosphere of quiet and expectation should prevail; yet it is not the teacher's personality, but the charm of the story, that should be obtruded. Language must be chosen suitably to the theme, and as a model for the children's imitation. Parts of the story may be re-told by various children, and the whole by one. The story may be told from various angles, as by sundry characters involved; for example, the version of the fox may be invented by one or more of the pupils. Although universal in its appeal, the story remains essentially the heritage of the childhood both of the individual and of the race. It affords scope to the imagination, and points many lessons to the mind of infancy and of primitive man. Experiments should be made with the original composition of stories, beginning with the device of telling a story up to a certain point, and requesting the children to complete it unaided.

Since years must pass before children can obtain that facility in reading which enables them to satisfy their natural craving for stories, the teacher cannot neglect the obligation of meeting their need. Moreover, there is no other way in which good literature can be brought to the children during

their infant years. Tone, stress, rate, pauses, may be varied in order to develop a high degree of pleasure and æsthetic appreciation. There must be sympathy on the part of the narrator with the leading character, and a thorough grasp of the main theme. A story that has become a classic must be faithfully rendered, and at critical points the exact words of the standard version should be used. Dramatization may follow, but not in such form that the atmosphere in which the characters lived and moved, whether ancient or modern, will be sacrificed. The drama is another, though a kindred, art.

3. *Explanation*

Explanation differs from exposition, in that exposition as such aims merely at placing facts clearly before the learner, while explanation aims at showing facts in their proper relation to other facts in a system. Both are informative types of teaching procedure, but while in pure exposition many significant relations may be taken for granted, in explanation they must be made explicit. The simplest form of explanation occurs when the phenomenon to be explained is subsumed under a larger class, as when it is explained that the duck-billed platypus is a mammal, but lays eggs and has a beak like a bird. Here the platypus is explained by 'subsuming' it directly under the genus mammal, and indirectly under the genus bird. The explanation of an artesian basin would be less simple, since it would involve a survey of the relations of several components of a complex geological structure, rather than the mere subsumption of artesian basins under a larger category or class.

In order to explain any phenomenon, causal relations should be brought to light. The 'why' and 'wherefore' of the phenomenon should receive direct attention. Yet in the school explanation differs from exposition, in that the work of explaining must be done by the pupil himself. Exposition exercises memory, explanation exercises understanding, reasoning exercises originality. Clearly, all three types of intellectual activity should be closely interwoven, so closely,

indeed, that it is hardly necessary to distinguish explanation from exposition. But it is customary for a new theorem in mathematics to be explained, rather than expounded or reasoned. In this case, a purely expository treatment might fail to relate the theorem to knowledge that is already familiar, and reasoning, although superior to explanation as a type of mental activity, might advance too slowly to fulfil the purposes of the course of study. Pupils might not have reached the point of reasoning out for themselves how a steam-engine works; yet they might comprehend the process fully once it has been thoroughly explained. Exposition might rest content with an examination of the parts of a steam-engine and their functions; whereas an adequate explanation would involve the use of a diagram in the construction of which all essentials for all steam-engines are included, and from which all non-essentials or 'accidents' are excluded.

What are the steps of procedure proper to explanation? In the first place, the *problem* to be explained should be felt by the pupils themselves; it should, as we say, 'come home' to them, or be 'brought home'. They should feel themselves 'up against it'. Let them 'sense' the mystery of the artesian well, or of the steam-engine, before it is explained. The next step consists in a gradual advance from the known to the unknown, which may for convenience be termed *interpretation*. Interpretation, as has been indicated, may take the form of bringing a phenomenon under a wider law or generalization known to the pupil; or, again, of relating it to a system of known facts which as a whole are wider than the phenomenon itself, although none of them may stand to it in the logical relation of a universal to a particular. Good definitions are of the nature of explanations, as, a book is 'a collection of sheets of paper, or similar material, blank, written, or printed, bound together' (Webster). In the primary school, the art of precise definition is being unduly neglected, with the result that few children can explain the facts which they have memorized. It it were desired to give

them a precise idea of what a book is, a volume which conforms to the definition, and also an aggregate of loose yet uniform printed sheets, may be shown to the class. 'What is this?'—'A book.' 'And this?'—'A pile of papers.' 'Why is this not a book?' Thus, gradually, by building upon ideas already familiar, the teacher explains, with the aid of the pupils, the distinction between a book and an aggregate of sheets. An explanatory lesson may be brought to a close by systematization and application.

CHAPTER VI

THE INFORMATIVE LESSON

B. SELF-EDUCATION

WHILE the lessons which have been described above are concerned with the giving of information, they have their complement in lessons of another kind, in the course of which the pupil derives his information for himself. In such lessons the teacher plays an unobtrusive but not unimportant part. When giving instruction he dominates the scene; but when supervising the drama of self-education he may well be fain to seek the obscurity of the wings.

1. *Learning by Experience*

The term 'experience' may be applied in education either, as in philosophy, to denote the totality of the experiences of which we may become conscious, or, as in common usage, to denote what is learned, not from books nor from intercourse, but from events at first hand. Here the term is employed in the latter and more limited acceptation. Learning by experience in this sense implies learning from the pressure of the practical situations or environmental conditions in which we find ourselves. To illustrate, the experience of being slighted by others may teach a boy not to carry tales, and two or three unfortunate fights may cure him of pugnacity. Being burned leads him to avoid the fire; narrow escapes make him careful. Moreover, experience teaches positive as well as negative lessons. Familiarity with climbing makes a person clear-headed and sure-footed, while much experience of good company produces grace without affectation and ease without buffoonery.

That children learn about life directly from experience, as well as indirectly through the instruction of the teacher and through books, is a self-evident proposition. Experience, indeed, is the original and often the severe teacher of both the individual and the race. The reaction of human

nature to experience has been the source of civilization and of the arts, of science and of industry. And, if experience is but one of several teachers of mankind, she remains the sole preceptor of the animal world. By experience, a captive squirrel learns that he cannot scratch holes in a wooden floor, and by experience an old horse comes to open every gate along the road. Experience determines the directions in which instinct may profitably be expressed.

How far do children learn by experience at school? Not, perhaps, as much as at home, at holiday resorts, at other people's houses, and in the street. But there can be no doubt as to the part played by experience in the playground and on many occasions in the boarding-school. Wherever the child finds himself in a situation of difficulty, with none but himself upon whom to rely, he can scarcely fail to learn his lesson. And the school has this advantage over home life, that in general the situations in which a child is apt to find himself at school are more closely defined and regulated, with a view to the process of education through experience, than those which occur at home. For many, perhaps for most, children, school experience is the best they will ever have.

Can the process of learning by experience be carried from the playground into the classroom? In some particulars, certainly. By experience, a child may learn the advantage of being considerate to the teacher and to his classmates. By experience, he finds that egotism is unappreciated, that disorder impairs learning, that unselfishness brings its own reward. Classroom experience should not be purely intellectual. It should be enriched by emotional and practical elements—joyous feeling and pure sentiment, free expression and co-operative activity. The result should be a well-rounded experience that is at once satisfactory in the present and anticipatory of the needs of future life.

Can lessons take the form of experience? Why not? The advantage gained from organized games and from excursions is chiefly experimental in character. Attempts

which have been made to use the heuristic method, whereby pupils may make discoveries, especially in science, for themselves, are founded upon the idea of self-education through experience. Again, if a class constructs an Indian village, cooks an Indian meal and practises the use of mimic Indian weapons, in this process experience is elevated to its rightful place as a major educational method. In the 'boy scout' and 'girl guide' movements, great store is set upon learning by experience. We are not here concerned with the broader definition of experience, according to which all forms of education fall under that head.

The method of self-education through experience is simple but effective. The child finds himself in a practical difficulty, and has to get out of it. Sometimes the teacher prepares the difficulty, and leaves the pupils to discover a solution. Naturally, this is easier to arrange with an individual than with a whole class. Many illustrations of this device may be found in Rousseau's *Emile*, but they are the examples of a theorist who was imperfectly acquainted with the exigencies of the educational art. Instead of being instructed, a child may learn by experience to use a mechanical toy, and in like fashion a group which cannot make its wigwam stand up may be left to find a way, thereby rediscovering the methods of Indian housecraft. Unlike instruction, learning by experience tends to develop self-reliance.

From the foregoing paragraph it follows that the steps in an experimental lesson are: (a) *Providing the situation*, (b) *involving the pupils in a difficulty*, (c) *leaving them to find their own way out*. To these some may be inclined to add (d) *pointing the moral*. But the last step is usually unnecessary, as if one were to say when the child has jammed his finger, 'That will teach you to be careful!'

Seldom, indeed, is a whole lesson planned in order that the pupils shall learn from experience, rather than by less direct means. Within the school, the nearest approach to a lesson-whole of this type may be found in infants' schools of the Montessorian type. Members of the class are per-

mitted to select their own piece of apparatus, 'long stair', 'broad stair', box of cardboard letters, set of cylinders to be fitted into appropriate holes, etc. The apparatus itself is 'didactic', that is to say, the apparatus teaches the children while they are engaged in using it. Individual children for the most part solve their own difficulties without reliance upon the teacher. After building many words from cardboard letters, the children discover how to write; they 'explode' into writing. By similar means, many lessons in colour, number and form may be learned.

Why is not the method of learning by experience used more freely in the schools? Mainly because, although it grinds exceedingly small, it grinds too slowly. What is learned by experience is well learned. But the process of learning is uneconomical of effort and of time, and uncertain in its effect upon character. The only kind of learning by experience that should be deliberately introduced into education is highly selective. Schoolboys or schoolgirls may be permitted to learn by experience what kind of reading they like, but the books to be found in the library have been chosen according to certain educational principles. An apprentice learns much from his experience in the workshop, yet the workshop itself has been constructed in the light of definite aims and purposes.

It is good teaching to prepare the way for probable experiences and to let the children learn thereby. Furnish a room for them beautifully, and they will behave themselves in it. Have a map of Europe made in the playground on a large scale, in three-inch concrete, but with the mountains in relief, and the pupils will amuse themselves, without any directions from the teacher, by instituting countless geographical journeys. But this is hardly what the man in the street describes as learning by experience.

In the ordinary sense of the term, experimental learning is effected by trial and error. It is only after many ineffective attempts that the old horse learns how to open the gates along the road. He makes various efforts of an apparently

random nature, regulated by desire and not by reason, one of which is destined to be crowned with success. The successful attempt is marked by a greater sense of satisfaction than the others. It is more fundamentally recorded in the horse's central nervous system than are his failures. After many days the record which corresponds to the successful co-ordination of the horse's actions has become so definite as to lead to prompt and skilful action. The secret of the latch is a secret no longer.

That human beings as well as other animals learn by trial and error is obvious; but the method is so slow and so uncertain that in most instances it should be abridged by instruction. Handwriting may be learned by trial and error, but the child should be taught how to hold the pen and what copy to imitate. No teacher would be willing to treat a writing lesson as a pure example of learning by experience. The conditions of the experience must be carefully selected and regulated. This done, let experience teach.

2. Learning by Observation

It has already been shown that the material of knowledge comes through the senses. For this reason, pupils should be encouraged to be observant, and care should be taken to provide material for them to observe. Since it is clear that a wide variety of elementary knowledge is desirable, observation in the early years of schooling should be general as well as specific. The teacher may begin the day by encouraging children from six to eight years of age to tell what they have observed on their way to school.

But the time soon comes when children must begin to limit their observation to the things that are best worth while. The bright child may not know how many steps there are in the school staircase, because in this instance exactness of apprehension does not matter. He may even be absent-minded about the incidents that occur around him, provided that he remain observant of conditions which are relevant to his purposes. It is related that a celebrated

university teacher, on hearing a noise from under the bed, inquired, 'Is anyone there?' 'No,' retorted a burglar. 'Oh, very well,' replied the teacher, retiring forthwith to sleep. But he was doubtless thinking of a matter more important than a petty burglary; and the instance, although not impossible, is extreme. Every allowance should be made for the absent-minded pupil who is thinking continuously upon a significant problem. No one can become a good observer unless able to inhibit those distracting stimuli which are patently irrelevant to the purposes of his investigation. Scientific observation is so highly selective that Archimedes was reported to have incurred death because he would not leave his beloved circles, even to regard the imminent threats of a hostile Roman soldier.

Observation is a process of learning from things, not from reading, and stands to objects in the same relation as study to books. So far as may be, observation places education on a concrete basis. Belief in observation as a method of education suggests the desirability of such practices as stocking the schoolroom with objects, undertaking excursions, teaching by laboratory methods, by action and dramatization, use of pictures, graphs and maps, inclusion of elementary science and of nature-study and manual work in the curriculum, employment of experimentation and inductive teaching, and regard for both the Pestalozzian sense-perception and the Froebelian self-activity.

How should a self-educative, observational lesson be conducted? The steps for which the teacher should make provision will closely resemble those which are appropriate to a lesson of the 'study' type. Observation is not mere perception, any more than study is mere reading. To observe is to perceive with a certain degree of care and attention. For the present it need not be assumed that the 'observation' lesson must have an inductive character, although this will frequently be the case. It may consist merely of an opportunist excursion to the zoological gardens. Some degree of definiteness, however, should be attached to all observation

except that of very young children. Accordingly, an 'observation' lesson should begin with the adoption of a more or less definite aim by the pupils themselves. Equipped with such an aim or aims, they next engage in free observation, in the sense not of an undirected but of a self-directed use of the organs of sense and the powers of interpretation.

Next, the teacher calls their attention to certain selected phenomena, the significance of which is likely to be overlooked. The results of observation, both free and directed, have now to be summarized; in the case of an excursion this may be done in the course of a subsequent lesson. The application of the learning gained by the pupils' observation may also be postponed; but it would be poor teaching to disregard it entirely. Thus the ordinary steps in an 'observation' lesson may be indicated by the terms (a) *incentive*, or establishment of dynamic aim or purpose; (b) *free but not unselective observation*; (c) *directed observation*; and (d) *summary of results*, to which may, perhaps, be added (e) *application*.

While the process of learning by observation is generally easy to the average intelligence, it is not simple, but compounded of several elements. The power of forming sensations may be regarded as fundamental. This power is shared by all, but not equally; for example, from thirteen to twenty-five per cent. of children have been found to suffer from defective hearing. Secondly, observation depends for its efficacy partly upon the degree of attention which may have been given to the sense-stimuli. Young children naturally give their attention to red and yellow objects; hence they name yellow and red correctly more frequently than they do blue and green. Thirdly, the success of observation depends very largely upon the retention of mental representations of previous experiences. Children learn to judge short distances at a very early age; this because their minds retain the traces of similar acts of judgment. Through the retention of co-ordinated visual and motor images, the boy or girl learns to catch a ball with unerring skill, and to draw

a house or a ship observed while on the way to school. Fourthly, good observation depends upon a mental process of assimilation and discrimination. An object is observed not only in the light of previous experience, but in the indirect light of interests which have been founded upon such experience. When far from his native land, a New Zealander, regarding the map of his own country, sees more in it than another, not merely because of having seen this map frequently in the past, but chiefly because of the interpretative power which flows as naturally from his patriotic interest as lava from the crater of a volcano.

It follows that an 'observation' lesson is concerned (a) with the provision of material to be observed; (b) with securing the maximum degree of selective attention on the part of the pupils; (c) with the utilization of previous experiences; and (d) with the right orientation of existing interests. In planning such a lesson, attention should be paid to each of these elements, since each must be regarded as essential to a successful issue. It is of little use for the teacher to bring in a huge bundle of assorted leaves as material for a lesson, unless he has determined how he is to secure the concentration of members of the class upon their classification, how far he can utilize what they already know about leaves, and in what ways he can enlist other interests, such as that which most children have in drawing, as his allies.

In conclusion, it should be remarked that an inquiring habit of mind, and a proper equipment for observation, have been the two main factors in the development of inductive science. The chemist Röntgen, while engaged on an experiment which involved the passing of an electric spark through a vacuum, was disturbed to find that the sensitized surfaces of covered plates had been affected. The result was the epoch-making discovery of X-rays. But how many people, even scientists, would have had the inquiring mind and the equipment for scientific observation which were necessary to turn such a phenomenon to account? Hence, if by rare

chance the teacher should find among his pupils one observer who is conspicuously gifted with the true scientific spirit, he should respect and encourage the budding promise of talent or genius.

3. *Learning by Imagination*

Closely connected with observational learning is learning by imagination. Observation leads to the formation of images of a literal or reproductive character. Careful observation of the leaves of plants, for example, enables pupils to form images so that they can draw types of leaves in the absence of the leaves themselves. An important step in the art work of schools is taken when pupils are instructed to observe an object out of school, which they are to draw in school from memory. Imagination of the literal kind is clearly a type of memory; it is the memory of percepts. The steps in a drawing lesson of this kind are (a) *selection*, (b) *observation*, (c) *reproduction*, (d) *emendation*. Handwriting without a copy, and mapping from memory, involve a similar procedure.

Many imaginative lessons, however, are of a different character. There is a higher type of imagination to which Shakespeare alludes when he writes:

And as imagination bodies forth
The forms of things unknown, the poet's pen
Turns them to shapes, and gives to airy nothings
A local habitation and a name.

This is creative or original imagination. Something is imagined which has never been perceived. Upon analysis, it is found that all the elements of any creative image have been drawn from experience; but they have been mentally combined into new and strange forms. Of this kind is the imagination of poets, artists, scientists and inventors. That children are capable of such imagination is obvious; they give imaginative accounts of their own doings, and it was a child who described a rainbow as 'a many-coloured ribbon drawn across the sky'. No lesson lends itself better to the cultivation of original or creative imagination than English composition.

From this point of view, a suggestion made in an official syllabus is worthy of consideration:

'Suppose the class is going to write the story of "A Terrible Struggle"—an original imaginative story. The teacher first tries to stir the imagination of his pupils; they are to tell the story of a struggle, a terrible struggle. Can they see the struggle taking place? Let them close their eyes and look at it. Who are struggling? Where? Why? Is it an even struggle? Does one get the better of the other? and so on. The children should not answer aloud, but only to themselves. As soon as imagination is fired, the children are set going on their story. They write freely, forgetful of the mere mechanics of composition (though much of the mechanics, having been made habitual, takes care of itself). When the story has been completed, each "proofs" his work, perhaps with the assistance of his classmates, until it is as correct as he can make it. Sometimes further proofing may be done at home through an interested elder brother or sister or a parent. Then it is marked by the teacher and finally corrected by the writer.'

In such a lesson, certain steps in learning are supposed to have been taken beforehand. (a) There must have been *perception* of struggles, otherwise the pupil has no foundation upon which to build his images. (b) There must also have been *literal imagination*; the pupil must not only have perceived the elements of a struggle, but must carry in his mind sufficient imagery to be able to represent these elements in the absence of the concrete situations in which they have occurred. A great part of the percepts and the images which are assumed to have been formed may have been derived by the pupil indirectly through books, pictures and stories rather than from direct observation or participation; but this is no bar to their use in constructing 'the forms of things unknown'. The step with which the lesson in composition actually begins is (c) *the selection of a theme*. Then follows (d) the process of *creative or original imagination*, the main part of the lesson. Next follows (e) art or *performance*; the story has to be written. The final step is (f) one of *judgment and emendation*, probably involving the re-writing of the exercise. Few will deny that the school is apt to make insufficient use of the child's imaginative powers.

4. *Learning by Experiment*

Whereas learning by experience resolves itself into an unregulated process of trial and error, learning by experiment involves conscious and deliberate trial, with a view to confirming or disproving something that is doubtful. In an experiment the conditions are regulated by the experimenter who is applying his practical test. While experimentation is far more typical of scientific and therefore of higher education than of elementary schooling, it should have a definite place at almost every stage of mental development. A child of nine can experiment with the growing of plants in pots under varied conditions; and a child of eleven can weigh the amount of water displaced from a full vessel when a floating object has been inserted, and discover it to be equal in weight to the floating object. The chief difficulty in the way of primary school experimentation is not immaturity of intelligence, but size of classes. Demonstration is not the same thing as experiment; for when the teacher demonstrates, the child's part is not that of a discoverer, but that of an observer.

Observation waits upon nature, but experiment takes the aggressive. Moreover, depending as it does upon personal initiative, experiment, unlike observation, can be repeated at convenience under controlled conditions. If any uncontrollable factors be present, they can generally be kept approximately constant, so that results independent of them may be obtained. At the same time, it is possible to claim too much on behalf of teaching by experiment. As a rule, little inventiveness is expected of pupils, the apparatus and the arrangement of conditions being prepared for them by the teacher. Experimentation in schools is a rigid method of inductive proof, rather than a genuine process of original discovery. But in the elementary school simple experiments should be made to ascertain the conditions under which seed germinates; and, according to the needs of a district, several varieties of wheat, or of potatoes, may be grown under uniform conditions in order to test their respective merits. Simple

astronomical experiments may be made with the 'shadow-stick'. Thus nature-study is an apprenticeship to elementary science.

What steps are appropriate to learning by experiment? Firstly, *a problem* must be isolated for consideration. Secondly, the idea or *plan* of an experiment must be devised. Thirdly, conditions must be regulated and *apparatus* set up. Fourthly, *performance* of the experiment follows. Fifthly, *tabulation* of results is essential, lending itself in many cases to statistical treatment. This order will tend to be followed by the teacher who attempts education by experiment.

5. Study

The primary school is not the place for study, unless study is to be defined in the broadest of terms. Study in the more restricted sense of the word belongs to a later period of life. It involves high powers of selection, concentration and sustained attention which are typical not of childhood but of adolescence and maturity. But what of study in the broader sense of the word? Acquiring knowledge for oneself—not in the manner of a college student, but in that which is appropriate to childhood—study in this sense of the word lies near the focus of the new outlook in education. If we are not to thunder eternally in our pupils' ears, then they must learn to study, to acquire knowledge for themselves, the uphill path being graded to their limited strength.

Motivation.—Widely as the child and the adult differ on a number of points, they agree in cherishing a common aspiration to surmount difficulties. *A strong desire* to learn is the first essential. If we are to encourage children to acquire knowledge for themselves, all our art will be necessary in order to evoke this desire. In past generations beating was the method adopted by all but the best teachers. There is no doubt that the method was of some use, in so far as it served to stimulate the efforts of the pupils; for there is no method so contemptible that it may not be utilized in this way. But if we look for something more—for something

that will induce the pupils to wish to study in the future—we are compelled to replace force by artistry. Since human nature desires to master obstacles, and since the desire of mastery may be applied to many and varied objects, it should not be difficult to induce a pupil to desire to conquer a problem involving study. How this may be effected has been described in our discussion of 'motivation'. For example, children will readily study a book in order to present a dramatic version of it at a school concert, or will read history in order to provide themselves with material for a debate. The so-called 'project' method, which closely resembles the Herbartian plan of concentration, involves the selection of a conscious aim by the pupils in order that their desire for study may be firmly established. They are keen to study the Australian aborigines when an aboriginal pageant is to be presented at school to the accompaniment of the inevitable corroborees, tribal ceremonies and kangaroo hunts. They will work eagerly to select materials for a class-book on the coal-mining industry. They tend to work best of all for an aim selected by themselves, but the real selection is usually made by the teacher. The minds of children at the primary stage, being given to imitation rather than to origination, are ready to make the slightest suggestion on the part of the teacher their own. But the fact that the project is the teacher's may not be realized, and should never be needlessly obtruded.

Selection.—If a strong desire is the first essential to study, the second is the selection of relevant material. To some extent, the desire itself will be selective, since it includes the consciousness of its object. Desiring to study the chief routes of oceanic travel, *ipso facto*, the pupils become aware that their materials belong to a certain field of descriptive geography, that they are to be gathered from far-flung sources, but that they exclude matters relating to inland areas. Thus the desire itself is selective, but not selective enough. From within the field appropriate data must be chosen. The geography book must be studied, the school

library ransacked, newspapers consulted, magazines brought from home to school, letters sent to steamship companies with a polite request for help in the way of maps, charts, booklets or posters.

Study differs from reading, in that study aims not merely at understanding what is read, but also at mastering it. The true student endeavours to make what he reads a permanent and habitual part of his mental equipment. He must give his closest attention for two reasons: firstly, in order to select, and secondly, in order to remember. Concentrated attention favours both processes. But this state of mind is too strenuous to be long maintained without intermission. Even in the best minds, it alternates with relaxed periods. Place a dot upon paper and see how long you can attend to it without wandering. More complex and more interesting objects can be studied for a longer interval; but there should be no attempt to maintain a maximum mental strain over long periods. Study closely for ten minutes, and relax for five; you will accomplish more in this way in an hour than by attempting to keep up your attention throughout.

Understanding.—It goes without saying, however, that, next to a strong desire, the first essential in study is to *understand*. In this connection it is desirable that as soon as a point has been thoroughly grasped, a note of it should be jotted down. If you are studying a well-arranged text, it will be found that the notes thus taken fall readily into logical form; if not, having completed a chapter or other section, you should rearrange your jottings so that they form a logical order, at least to the satisfaction of your own mind. A simple experiment will convince the most sceptical of the importance of understanding what is learned. Commit to memory a series of monosyllabic words, perhaps twenty, which have meaning. Note the time taken. Learn also by heart a set of twenty nonsense syllables. The time taken will be very much longer. Next day write down those of each list that you can remember. Do the same at the end of a week. In each instance, the meaningful words will be found to have

been remembered better. Similar experiments in learning by heart significant paragraphs and nonsense paragraphs should be equally convincing.

Ultimately, the essential elements, those which the student jots down in his notebook, should be reduced to habitual reactions. This involves their association with other ideas already familiar to the mind, which will tend to reinstate the acquired ideas in the focus of consciousness whenever they themselves come into focus. Just as children habitually react 'fifty-six' when the teacher says 'eight sevens,' or '1066' when he mentions the Norman Conquest, so the more advanced student of psychology may react 'registration, retention, recall and recognition' when the essentials of the memory process are called for at examination. But in each case the situation needs to have been understood before the bare essentials have been reduced to the plane of habit. The process which leads to a parrot-like repetition of facts may involve attention and concentration; but it is not study. Surely St. Jerome must have forgotten this when he suggested that the child Paula should exercise her memory by learning long lists of patriarchs from the Old Testament.

Arrangement.—Study is not the whole art of learning; it is the art of learning from books. Learning from things may conveniently be distinguished under the name of observation. Now, if the first essential in learning from books is to understand what is read, the second is to arrange the information which has been thus acquired. The arrangement may vary from a simple, logical statement of three or four essentials to a skilfully-devised mnemonic. For example, the student, having read an introductory chapter in psychology, may be content to set down in his notebook: Elements of mental states—(1) knowing, (2) feeling, (3) striving. Or, if he please, he may write a number of sub-heads under each, marked a, b, c and d. His analysis will be only as detailed as befits his purpose; but if he has made no analysis, mental or written, he has not studied. The synthesis is just as important as the analysis; he must not only know the

elements, but also what they are elements of. He must realize that in the instance adopted, knowing, feeling and striving are elements present in varying proportions in every state of consciousness. He must see his subject in its parts and as a whole. Then, and only then, he has studied. Again, when he decides that the elements of memory are registration, retention, recall and recognition, he is adopting a simple mnemonic device, since each of the terms begins with the letter 'r'.

Repetition.—Not yet, however, is the process of study complete. As we have seen, it involves making knowledge habitual. Habitual knowledge is a permanent part of the mind's make-up. It involves prompt availability, readiness of expression, and freedom from error, as in 'eight sevens are fifty-six'. To this end, repetition is necessary. 'Repeat without ceasing' is a well-known motto. Repetition, preceded by understanding and arrangement, makes the good student. Three things Erasmus suggested to those about to study—understand, arrange, repeat; and probably Erasmus knew as much about study as any man who has lived.

It will be objected that the advice of Erasmus allows no room for originality. This is not altogether true; one may be original in his comprehension, in his arrangement, and possibly even in his mode of repetition. Have originality, by all means, if you can. But we cannot all have it; and in any case, the most valuable forms of originality involve the knowledge of what has already been learned in a given field. Having studied adequately, one may be as original as he pleases; not having studied, one can only be eccentric.

The studious habits of the young are sometimes turned to gall and bitterness by sour and ill-natured pedants. As Montaigne complained, they thunder eternally in their pupils' ears, as if they were pouring into a funnel. In this way the pupil's mind may be dulled with incessant noise. Even an adult student may experience difficulty in the search for a quiet environment, while every suburban gramophone clangs forth its barbaric jazz. But such difficulties may be sur-

mounted. In modern schools the pupils are no longer perpetually plagued by the raucous voice of a harsh master; and for his part the mature student, long after the school has been left behind, may choose between finding a quiet spot and inhibiting the disturbing stimuli by the exercise of his own powers of concentration. Intellectual ardour will find a way.

It may be added that the outcome of study varies not only in quantity but in quality. Not only does one student get more out of his work than another, but he also gets it better. Now the quantity of a student's achievement, let us say, in two hours of study, will vary with such factors as his concentrated attention and interest, the completeness of his comprehension, the orderly character of his arrangement, the recency, frequency and vividness of his repetitions. But its quality will depend chiefly on his native ability, and especially upon his powers of selection. To study well, that is, so as to achieve distinguished and original results, there is only one rule to be observed: have talent! One is then in a position to select to such advantage as to achieve results which may show some degree of originality. The talented student selects from his studies not a clatter of logical subtleties, not an ostentatious display of mnemonics, not a profuse wealth of detail, not even a ready-made scheme of analysis, the work of another's brain; but, rather, a few fundamental facts and studies. Mere verbal acquisitions bristle with misinterpretations. A pupil who had studied the early history of the American colonies said: 'New York was taken by the Duck of York before Pennsylvania was settled by the Quackers'; and again, 'Lord Baltimore founded the colony of Maryland, intending to build an asylum to keep a persecuted religious sect in'.* This is how not to study. But when a well-equipped mind bends itself to the task, selecting and learning a few fundamentals, rejecting and forgetting irrelevancies, then on these pegs of association all the ornamental fabric of the intellect will depend more superbly and more gracefully than a show of model frocks from a set of Parisian robots.

*Davis, *The Technique of Teaching*.

From the foregoing analysis, it follows that a 'study' lesson may be planned under the following heads:—(1) *Motivation*, (2) *selection of material*, (3) *understanding*, (4) *arrangement*, and (5) *repetition*, to which may be added at the teacher's discretion (6) *application* to future work.

Home-work.—The lessons assigned by the teacher will differ in kind according to whether they are to be done in the schoolroom or at home. Home-work has to be done without expert assistance and in the evening of the day when mind and body are apt to be jaded. It is desirable that this work should be devoted to mechanical or artistic ends, or to practice and review, rather than to breaking new ground. Mapping and drill operations in arithmetic are examples of suitable types of home lessons. At school, on the contrary, lessons may be assigned with the aim of securing an appreciation rather than a solution of difficulties. It does not even matter if the children are asked to attempt impossibilities, provided the teacher comes immediately afterwards to turn them into possibilities. For one object of introducing short intervals for study into the school time-table is to reveal to the pupils their own ignorance. But this is hardly a legitimate object of home-work, firstly, because an extended, unremunerative effort is apt to cause discouragement, and secondly, because a considerable time-interval elapses between the completion of the pupil's own work and the teacher's explanations. The conditions of home-work may briefly be summarized. Firstly, home-work ought to be devoted to practice in operations already understood. Secondly, it should form an integral part of the course of study which is being followed at school. Thirdly, it should be definite and limited in scope, not exceeding half-an-hour for young children, or two hours for boys or girls above thirteen years. At least two evenings in the week, exclusive of Sunday evening, should be free from all home-work. Fourthly, the lessons should be thoroughly exacted, tested, and examined. Fifthly, as far as the work lies within the ability of the pupil, it ought to be done without the help of parents or friends. Sixthly,

since the parent knows better than the teacher whether the work is too much or too little for the pupil, the parent ought to be consulted from time to time about home-lessons, and a half-done lesson ought to be accepted when the exercise book bears a parent's initials. Among the advantages of home-work should be mentioned the formation of habits of independent effort and self-active study, the acceleration of the advance of pupils in their work, and the opportunity of securing more effective co-operation on the part of the parents in the education of their children.

'Busy' Work.—In schools where one teacher has to look after a number of small groups of children of widely different ages, work of a character similar to home-lessons is set to be done while the teacher is attending to the work of another class. The need for 'busy' work arises less with older pupils who can be trained to study from their text-books, than with little children. For example, young pupils beginning the study of number may be asked to form a festoon of coloured pieces of paper. So many pieces of one colour are to be placed next to so many of another. 'Busy' work may be invented in connection with spools, peas, tooth-picks, grains, or marbles, or recourse may be had to the kindergarten occupations. Copying from the blackboard or text-book is extensively used in such circumstances; but it is unfair to assign any task merely for the sake of avoiding trouble, and the value of every lesson assigned should be carefully estimated beforehand by the teacher. Over and above the necessary quarterly and weekly programme, it is wise to map out the approximate work of each school day, as a teacher is then less likely to be at a loss in assigning lessons either for home or school. Vague directions to study are of little value; it is almost more to the point to allot some definite task. It is better to ask a class of young children to write down all the words they can find that end in 'tion' than to ask them to write down all the hard words, and better to require an advanced class to study what their text says of the life of Oliver Cromwell than to have them read a given chapter without a definite end in view.

CHAPTER VII

THE INFORMATIVE LESSON

C. INTERCOURSE OR MUTUAL EDUCATION

IN some informative lessons the teacher instructs the pupil, in others the pupil instructs himself, and in others the teacher and the pupil instruct one another. In the two preceding chapters the first and the second type of informative lessons have been examined. It remains to consider that type of informative lesson which involves a genuine process of give-and-take as between teacher and pupils, or between the pupils themselves. To the instructive and the self-educative type of 'information' lesson must be added a third—the 'intercourse' lesson.

As John Locke indicated, the tincture of company sinks deeper than the outside. The quality of intercourse depends upon the company one keeps. Outside the schoolroom, good counsel comes from one's friends; inside, from one's teacher and occasionally from one's fellows. In his essay on Friendship, Francis Bacon writes: 'Heraclitus saith well in one of his enigmas, "Dry light is ever the best", and certain it is, that the light a man receiveth by counsel from another is drier and purer than that which cometh from his own understanding and judgment; which is ever infused and drenched in his affections and customs.' Intercourse not only reveals the world to the pupil, it reveals the pupil to himself. Thus, but for obvious practical difficulties, a larger part of school life should be devoted to intercourse than is at all customary, and even under existing conditions a certain proportion of lessons should be given on the 'intercourse' plan. For adults, intercourse is the readiest of all methods of intellectual development, and for children it is one of the most interesting.

1. *Conversation*

'Intercourse' lessons may be said to fall into several types, of which the chief are conversation, argument, deductive and

inductive reasoning, and dramatization. Let us begin by considering lessons of the conversational type.

Conversation is to be distinguished from mere catechization, an old and obsolete method of examining, rather than of teaching. As a type of lesson, conversation is informal; hence it affords a natural introduction to more formal work. Just as a manager may talk to an employee about his new work before it is begun, so a teacher may converse with the pupils about France prior to a systematic treatment of French geography, or about a given subject for composition prior to the practice of the art of composition itself. The advantage of conversation lies in its ease, freedom and adaptability; hence the attitude of the teacher to the pupils should be one of equality. Formal questions and answers are to be deprecated.

Conversation is the natural starting-point of English composition, which is, at the outset, oral. A picture or other object is sometimes introduced in order that the children may have something definite to converse about. For the teaching of foreign languages, conversation is almost indispensable, representing, as it does, a method similar to that by which children have learned their native tongue.

2. *Argument*

To denote a type of informative procedure, the term argument is here applied, not in the old sense of proof, nor in the sense of reasoning, nor of theme, nor of 'business in hand', but in the sense of controversy and debate. In the higher education of the ancient Greeks and Romans, and in the scholastic philosophy of the Middle Ages, argument in the sense of logical controversy provided the dominant method of procedure. Although now relegated to an informal and subordinate status, argument is still essential to clarity of comprehension and to facility of expression. It may be defined as the practice of reasoned discussion or dialectic. He who does not debate must inevitably suffer from a lack of intellectual readiness. This is one of the

reasons why the equipment of a teacher should include some experience in a debating society. The fact that argument may be abused, that it may lead to the die-hard defence of an hypothesis instead of to the disinterested search for truth, has tended to obscure its value as an informative method, and has relegated it to an undeserved oblivion. Argument compels a man to keep his knowledge in readiness for use, since notes and books are of little avail in the process of reasoned controversy. Of a medieval university student it could never be said, as it has been said of a student of our own time, that having had the misfortune of losing his trunk full of notebooks, he lost his education.

Although the capacity for sustained and reasoned argument reaches its zenith long after the elementary school has been left behind, experience has shown that a limited use of debate may not only give motive and variety to primary work, but that even at this stage it is eminently capable of exercising and developing intellectual power. A broad and simple theme, within the pupils' comprehension and related to their work, should be selected. Preliminary study is necessary in order that the pupils may equip themselves with facts and ideas. Suppose the theme to be, that the American colonists did well to declare their independence, or that the real hero of such-and-such a tale is not the nominal hero, but so-and-so. The steps in the treatment may be: (a) *Selection* of the topic in consultation with the class; (b) *division* of the whole class into sides, voluntarily chosen; (c) *reading up the subject*, with note-taking; (d) *a quick oral test and inspection of notes*, which may have been made at home, by the teacher, with selection of those best equipped to be the representative speakers on each side; (e) *the debate itself*, organized under a member of the class as chairman, with the teacher as prompter, each speech being limited to a duration of five minutes; (f) *an inspection of the arguments* which have been summarized on the blackboard by the teacher while the debate is in progress; (g) *a vote* on the part of the whole class for the side which has presented the

better case. Under such conditions, intelligent children are likely to do more work, and to greater advantage, than under the habitual conditions of an ordinary lesson. Among other advantages, the expectation of a debate may ensure a good attendance on a Friday afternoon.

From the time when Aristophanes objected that the young were being led away from the arena of action to that of words, criticisms of argumentative education have accumulated. The danger is that readiness, resourcefulness and ingenuity may come to be preferred to the search for truth, as with some of the Greek sophists and the medieval schoolmen. Milton pictures the fallen angels in high and learned debate upon subtle questions in philosophy and theology:

Others apart sat on a hill retir'd,
In thoughts more elevate, and reason'd high
Of Providence, fore-knowledge, will and fate,
Fix'd fate, free-will, fore-knowledge absolute,
And found no end, in wand'ring mazes lost.

But it is not by argument alone that angels fall; and readiness of wit and expression, if inferior to sincerity of intellect, is so little to be despised that an occasional argumentative lesson may be conducted in the primary school. Although the aim of argument may be deemed to be understanding rather than fact, it is desirable that rival systems of thought should be brought face to face in the school on a trivial scale, if only by way of preparation for the grand controversies which echo through the portals of adult intellectual life. In particular, pupils should begin quite young to define their terms, and to recognize that opposition in thought can occur, and may sometimes be resolved.

3. *Deductive Reasoning*

Argument should consist of expansive reasoning, but in practice it is impossible to confine a debate to the canons of strict logic. This is not true of lessons of the mathematical or of the scientific type. In such lessons the most rigid rules of reasoning must be applied.

Reasoning is a process peculiar to mankind, by which new conclusions are inferred from given premisses. Frequently the higher animals appear to reason, but in every instance their mental processes are explicable as merely associative. This is not wholly the case with reasoning; or if it is, the power of association involved in reasoning is of an altogether higher index than the power which is involved in perception, imagery and memory. Yet at the age at which children come to school they are already capable of reasoning, provided the premisses lie within their comprehension. Therefore, the reasoning which is involved in school operations should not all be done for them; nor, since reasoning presents many difficulties and pitfalls, can it all be done by them. It is best done by the pupils in co-operation with the teacher.

Reasoning has two main varieties, deduction and induction. In deduction the inference is from the general to the particular; in induction it is from the particular to the general. An illustration of each may be drawn from a familiar subject of instruction. Euclidean geometry, assuming certain axioms and postulates as its data, and demonstrating many special propositions therefrom, is deductive in character. On the other hand, the re-discovery of scientific principles, such as the 'principle of Archimedes', by experiment is a process of induction.

It would be a great mistake to think of deduction and induction as processes that are opposed to, or even independent of, one another. Induction terminates in a general proposition, from which deduction takes its departure. Thus induction and deduction are complementary. In actual reasoning, either of these types is continually being exchanged with the other.

Let us take a simple case of mathematical reasoning of the deductive type. 'One side of a right-angled triangle is eight feet, and the other side is six feet, find the hypotenuse.'

The pupil has first of all to understand the problem. Next, he has to select a generalized idea or ideas from which he may deduce the required result. The general principle in

this case is that the square of the hypotenuse is equal to the sum of the squares on the other two sides. Other general ideas also are involved, e.g., what constitutes a right-angled triangle, what is meant by a square, and what by square root. From these general ideas, and especially from the idea that the square on the hypotenuse is equal to the sum of the squares on the other two sides, the pupil proceeds to infer:

'The square of 8 is 64, and the square of 6 is 36; the sum of 64 and 36 is 100; the square root of 100 is 10. Thus the hypotenuse is 10 feet.'

In such a unit of deductive reasoning, one step might very well have been inserted to which no reference has been made. That step is the anticipation of the result. As soon as the problem was apprehended, the pupil should have been able to anticipate that the hypotenuse would be longer than either of the two given sides, since the right angle would necessarily be the largest angle of the triangle, and the longest side would be that which was opposite to the largest angle. He could thus anticipate for the hypotenuse a length of more than eight feet. Again, he should realize that the length of the hypotenuse must be less than that of the two sides added together, since any two sides of a triangle are together greater than the third. Thus he would anticipate that the length required would lie between eight feet and fourteen feet. Or, failing to recall the principles involved in such anticipation, he could make a drawing that would serve as a check to his solution. By such anticipation, innumerable foolish answers in mathematics may be avoided. The pupil who anticipates approximately his answer will not, unmindful to take the square root, set down the length of the hypotenuse at 100 feet, or commit some parallel absurdity.

From this simple illustration the steps proper to deductive reasoning may be gathered. It is seldom necessary that a strict syllogistic procedure should be followed, one premiss usually being understood at each stage. The first stage, after such *motivation* as the teacher may deem necessary, is *comprehension* of the problem. The next is *anticipation* of the

approximate character of the result. The next is *inference* from the general to the particular, which frequently has to be interspersed with elements of the reverse process. The final step is *formulation* of the particular conclusion. In deductive reasoning, this result, being particular in character, seldom has to be applied in future operations, unless special plans have been laid by the teacher to this end, or unless, as in Euclidean geometry, the particular conclusion is itself a generalization in relation to individual instances.

4. *Inductive Reasoning*

Except in the field of mathematics, the teacher generally prefers that pupils should reason inductively. Even in arithmetic, it is desirable that the properties of numbers, such as fractions, should be ascertained by an inductive process before they are assumed as general ideas. Only after the examination of many fractions, such as $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$, $\frac{4}{8}$, etc., should it be concluded that when the numerator and the denominator of a fraction are multiplied by the same number, the value of the fraction remains unchanged. Afterwards this principle may be assumed as a general idea from which the validity of particular questions may be deduced. Similarly, formulae such as that which is used for finding simple interest should be derived by induction from particular instances before being applied to deductive uses. Induction is the natural process by which broad new truths are discovered. Whereas deductive conclusions are always implicitly present in the premisses, inductive conclusions go beyond the premisses. The fact that the hypotenuse is ten feet is implied in the proposition that the sides of a right-angled triangle are respectively eight feet and six feet; but the fact that when the numerator and denominator of *any* fraction are multiplied by the same number, the value of the fraction remains unchanged, goes beyond all the particular instances that have been examined by the 'inducer'.

If inductive reasoning is thus necessary in mathematics, the field to which the pure deductive art is now almost exclu-

sively confined, how essential is it in other branches of school work? Except when burdening the memory, the teacher occupies a great part of his time in developing the minds of his pupils on inductive principles. Grammar, which lends itself to both inductive and deductive methods of procedure, is treated preferably by induction. Granted that deduction may in point of time be quicker, yet induction does more to stimulate the process of intellectual apprehension. In literature, history and geography, the pupils continually, under the teacher's guidance, discover general principles through the examination of particular facts. In music, general notions of pitch, time and loudness are developed gradually as the result of the observation of particular instances. But it is in the field of nature-study and elementary science that induction reaps its full harvest; no other method is appropriate here. It is only by inductive inference that the elementary laws of physical geography, geology and biology should become ~~the own to childhood~~. No other educational process has ~~up~~ such an effect, both in developing ~~the higher powers of~~ the mind and in relating them to useful knowledge.

Although frequently only a small part of a lesson is cast into a form suited to inductive reasoning, for present purposes it is convenient to assume that a whole lesson is to subserve this method. Many teachers complain that there is not time for their work to be done in this way. If, they allege, an inductive treatment is adopted, the course of study will never be completed. But there is little ground for the belief that less work will be done or covered in a given time on inductive than on instructive lines; and if it were, the loss would be offset by the gain in mental efficiency which inductive reasoning produces. Reasoning is a means of revising habits; but there is one habit that needs no revision, and that is the habit of reasoning.

A lesson on the geography of the West Indies might proceed on the traditional or instructive plan, a method well enough if the teacher be master of his subject, otherwise as sapless as the rod of a medieval schoolmaster. But by way

of variation, the lesson might conveniently be cast in the inductive mould. Motivation would be provided by the teacher's introduction. 'Here is a map showing the West Indies, as well as North and South America. If you could take ship and sail among these islands, you would see them in order as they are shown here, but with mountains on some, lagoons in others, and vegetation stretching down to the water's edge. Yet if you could have lived a million years ago, a very different map might have been required. When you discover for yourselves how that map would have to be drawn, you may draw it carefully in your books. But do not draw until you are sure that your discovery is correct. In the meantime, let us see what facts we can discover to aid us in reconstructing the map to fit the conditions of a million years ago.'

Thus the first step in an inductive lesson is to realize that there is a problem which requires solution. This step had to be taken before Copernicus, a Harvey, a Newton or a Darwin could draw his great conclusion, and this step is necessary before the humblest pupil will be in a position to enter upon his inductive quest. Ultimately, the problem originates with the teacher, but the pupil must make it his own. Thus Socrates made it his business to lead his pupils to realize that there is a problem concerning the nature of justice, or courage, or friendship, before he permitted them to enter upon the rational examination of the selected theme.

The next step is the collection of data which are likely to be relevant to the investigation. Darwin spent years upon nothing but the collection of suitable materials; Newton laid aside his law of gravitation because his data were imperfect, returning to it only when a closer measurement of the earth's diameter enabled him to advance from a well-secured base to the mathematical conquest of the stars. Here again the teacher must collaborate with the children, who cannot be expected to isolate their data with the skill of a trained scientist. 'Who will trace with the pointer the mountain chains in these islands? On the mainland? What current is this?

Who will trace its course? What does your text-book say about the Caribbean Sea? About the Gulf of Mexico? Some of these are coral islands. On what are they built?' By such questions the children are assisted to select a mass of data, such as the continuity of mountains in the large islands with those on the mainland, the constant impact of the Gulf Stream, the shallowness of the Caribbean Sea and the Gulf of Mexico, the continuity of submarine mountains on which coral islands have been built, with mountains above sea-level, and sundry similarities between the flora and fauna of the West Indies and those of North and South America.

The next step to be taken in an inductive investigation is the close observation of the selected data with a view to the formation of a hypothesis relevant to the solution of the problem. In this the pupil should not be hurried. 'What is suggested to your minds by the examination of these facts? Those who have formed a clear idea of the map that would have had to be drawn of these regions a million years ago, put up your hands. Come out and whisper your idea to me while the others are thinking', etc.

When sufficient time has been allowed, one of the hypotheses formulated by the pupils should be selected for examination. Probably it will be the right one, that the West Indies once formed a part of a larger continent, from which, through the action of the Gulf Stream, and possibly through subsidence, that portion now covered by the Caribbean Sea and the Gulf of Mexico has been effectively claimed by ocean.

When a hypothesis has been framed it must be tested. The test should be rigorous, not perfunctory nor slipshod. Does the hypothesis fit all the known facts? Pupils of upper classes in the primary school should become familiar with this question. Does any other hypothesis fit the facts equally well? For example, similarities between the flora and fauna of the West Indies and those of the American mainland are explicable not only on the hypothesis that the islands once formed part of a larger whole, but also on the hypothesis

that they were always distinct, seeds and animal life having been carried to their shores. So far as this part of the investigation goes, both hypotheses fit the facts, and either may be correct. But the former hypothesis will be found to fit the remaining facts better than the latter.

In the course of an inductive investigation, it will sometimes be found that one hypothesis after another fails to fit all the known facts, and has to be discarded. For example, although many inductive researches have been made into the manner in which coral islands are formed, finality of theory has not yet been reached. At length, let us suppose, one hypothesis passes all tests, and as far as existing knowledge goes, is completely verified. The next step is the formulation of the generalization which has been reached. 'The West Indies remain as the outer rim of land which formerly occupied the areas of the Caribbean Sea and the Gulf of Mexico.'

Once discovered, a generalization should be applied in various ways. If a mathematical formula has been reached by inductive reasoning, it should be applied to many new problems. The generalization regarding the ancient geographical status of the West Indies leads to an inquiry about the continuity of geological and mineral formations, the nature of agricultural productivity and perhaps other fields of interest upon which new light has been thrown. A generalization is scarcely worth forming unless it can be amply applied. It is the vast extent of the applicability of the Copernican theory of astronomy, the principle of the circulation of the blood, the law of gravitation and the theory of organic evolution that invests these generalizations with such mighty significance. Even a law of grammar, once discovered by the pupils in co-operation with the teacher, should be thoroughly and widely applied.

From the foregoing discussion it follows that the steps of procedure appropriate to an inductive lesson are (a) *motivation*, (b) *apprehension* of the nature of the problem, (c) *collection of data*, (d) *examination of data* with a view to

the formation of a hypothesis, (e) *test* or verification of the hypothesis, (f) *formulation* of a generalization, (g) *application* of the generalization to specific instances.

5. *Dramatization*

Teaching by dramatization, that is to say, by imitation involving action, is of unknown antiquity. At the initiation ceremonies of many primitive tribes it takes an honoured place. At other times a tribal fight or a hunt may be 'staged'. In every civilized community dramatic representation has been practised, although theatrical performances of literary plays, as we know them, are of Greek origin. In the Middle Ages, doctrine and morality were alike illustrated in the drama. Following the Renaissance, the dramatic art reached a height to which only the ancient Athenian stage at its zenith can challenge comparison. In the hands of a Shakespeare, or of a Sophocles, the drama is its own justification; but the original function of dramatic art was religious, moral or educational. Hence, it is not surprising that the modern school should find in dramatic representation one of its most effective methods.

Dramatization within the school is of two kinds, the incidental or *impromptu*, and the rehearsed or formal. With a primary class, incidental dramatization should be practised daily. On hearing or reading the story of Horatius, the class is at once ready to divide itself into two parts, representing respectively the host of Lars Porsena and the defenders of Rome. An imaginary Tiber separates the armies. Horatius advances alone, repeats his lines, and is joined by two doughty comrades. The fighting, the hewing of the bridge, the swim of Horatius to the Roman shore, the reactions of the watching hosts, are enacted with energy and promptness. Let no one fear that the effect of the poem will be spoiled by the incongruous identification of a modern schoolboy with an ancient warrior, still less by an absence of scenic effects. Beneath all differences the human spirit remains one and the same; any of these boys may become an

Horatius. Imagination supplies weapons, city, army, populace, everything that is wanting to the *ensemble*. Even 'the ranks of Tuscany' can 'scarce forbear to cheer.'

Together with conversation, argument, induction and deduction, the practice of dramatization is essentially a process in which neither the teacher nor the pupil takes up a dominating position, but in which the personalities of both must interact if a satisfactory result is to be produced. Sometimes, indeed, the details of impromptu dramatization may be left wholly to the pupil's discretion. 'Come and show what *tug* means.' 'Act the part of an archer loosing an arrow from the string.' Even such a scene as that in which Raleigh lays his cloak at the feet of Queen Elizabeth may be presented by the pupils unaided. At other times, as when the story of Red Riding-Hood is to be enacted, suggestions from the teacher may be required. The teacher may have prepared a red hood and a red cloak for the occasion. Yet no rehearsal may be deemed necessary.

Although dramatic representation is usually associated with the English lesson, it should be employed in connection with other subjects also. A lesson on the post office, or on the railway station should be treated in part dramatically; first-aid should be taught in connection with the imitation of an accident, a patient and a rescuer; geography may involve the impersonation of towns, rivers, mountains and even elements of a ship's cargo by pupils; or in nature-study a pupil may become the mouthpiece of a bird, an insect or a plant. Nothing prevents that a child should project himself into any observed manifestation of nature. Unless self-consciousness intervenes, the child is ready for anything, to erupt like a volcano, or to run a race round the sun with mother earth.

Although incidental dramatization occupies but part of a lesson-period, it may furnish a motive for the whole. Hence any lesson which leads to dramatization may be described as a dramatic lesson. How should such a lesson be conducted? At the outset (a) an *incentive* is provided by the announce-

ment that the subject is to be acted, and that those pupils who study it well are to be selected as the actors. Secondly, it commonly happens that (b) *preliminary information* must be given by the teacher. Next follows (c) *study of the subject matter*. Afterwards (d) the teacher examines his pupils by a rapid series of *questions*, as a result of which (e) he makes his *selection of actors* for the various parts. Those not selected for individual parts may be permitted to comment at intervals, somewhat after the manner of a Greek chorus. The pupils now concentrate upon (f) *the study of their individual parts*, some part being allotted to the chorus in order that all may be actively employed. Next comes (g) *the representation*, the teacher, seated at the side, acting as stage-director. Certain variations upon this plan of procedure may be introduced at the teacher's discretion; for example, the class may be allowed to make its own selection of actors, or they may be selected during the play interval, the better to prepare their lines at home in readiness for a performance on the following day.

The purpose of incidental dramatization is chiefly (a) to give an outlet to instinctive activity, (b) to illustrate meaning, and (c) to provide an incentive to good work. The enactment of an episode is a more complete expression of the self than the mere hearing or reading of the same episode. It is also a clearer revelation of meaning. Moreover, dramatization is so congenial to childhood that children will work to master a scene which they are to be privileged to imitate.

Incidental dramatization is of far greater value to the work of the school than the preparation and presentation of a formal drama. The latter process occupies much time, has little illustrative value, employs members of the class unequally and sacrifices spontaneity to stage effect. At least one boy at one time had the misfortune to rehearse for weeks the small part of the father in 'Beauty and the Beast,' only to make a horrible hash of it at the school concert. None of the main advantages of incidental dramatization—self-expression, illustration, incentive—extends undiminished to

rehearsed miming, from which the 'first, fine, careless rapture' has departed.

The benefit of formal dramatization by pupils is almost wholly confined to the subject of English. Hence no plays should be enacted by pupils except such as have literary value. Geography and history may be taught better by informal than by formal dramatization. But there is no better means of improving spoken English than the preparation of a part in a play, and no better way of understanding and interpreting a great drama than by acting it. Great advantage is to be reaped from the practice of having pupils make their own dramatic rendering of a good prose story, a narrative poem or a novel. If they should read *A Tale of Two Cities*, let them write and perform their own version of Dickens's masterpiece. Nothing will interest them in dramatic literature as much as an attempt at play-making. Sundry pupils may read standard plays in order to study some elements of the art. This kind of work is suited to higher primary or lower secondary classes; but improvised dramatization begins in the infants' school and continues throughout the primary stage.

The main steps in formal dramatic work are taken partly in, and partly out of class hours. They involve (a) the teacher's *introduction*, (b) *reading*, (c) *selection* of the portion to be acted, (d) *allotment of parts*, often best made by the pupils themselves, (e) *study* of the parts, (f) *rehearsals*, and (g) *production*. When the play has to be composed from a novel, a considerable amount of committee-work devolves upon certain pupils, who select dramatic incidents, write up two or three short plays, and finally effect a combination of the best elements in these. As a rule such work is best suited to pupils in their 'teens. In formal drama sundry difficulties of costume and 'properties', negligible in improvised miming, have to be surmounted. But infants' and primary schools are natural theatres for impromptu dramatization, the applicability and value of which it is difficult to overestimate.

CHAPTER VIII

THE PRACTICAL OR ACTIVE LESSON

PRACTICAL lessons fall into two main types, those directed towards skill or habituation, and those directed towards some other form of practical or active expression.

Advantages of Skill

Let us notice briefly the great advantages which skill entails. First of all, it makes performance easy. The skilful musician can perform without effort what would be extraordinarily difficult for an unskilled person, perhaps altogether impossible. We are familiar with the fact that, in learning, great difficulty is incurred; whereas, when we have learned, the difficulty seems to have disappeared, so completely indeed, that we can scarcely persuade ourselves that the task at one time seemed hard. Secondly, how certain is the work of the skilled performer, how free from mistakes! Mistakes are the necessary accompaniment of learning; they seem to disappear when skill has been reached, so that the most complex and difficult things may be done without any error at all. Finally, how economical is skill! Skill saves our mental effort, and enables us to direct it to something else. When we dress ourselves, we do so by a certain acquired skill, the result being that while dressing, we are quite capable of thinking of something else altogether. The mind thus controls two things at once. Many of us could readily play a piece of music and talk to a friend at the same time, showing the extraordinary way in which skill liberates thought and economizes attention. In fact, such are the advantages of skill that we could not live without it. By far the greatest number of all the actions which we perform are done as the result of skill which we have acquired in the past, often after great difficulty. It takes a child a long time to gain the skill to lace up his own boots; but with an

adult the action is easy, quick, certain and economical of attention.

In the case of animals, skill is, for the most part, inborn; although from training animals may gain skill in certain directions which was not innate in them. The seal that twirls a ball on his nose has learned his skill, but the bird that flies has not learned to fly; the skill of flying has been born to the bird, just as the skill of building its nest has not been learned from other birds, but is innately registered in its nervous system. Man alone has very little skill born in him; he is inferior to the birds and beasts in certainty and definiteness of instinct. Thus, while a chicken but a few hours old can peck at a grain of food with great speed and sureness, a child does not attain such automatic precision until after the lapse of a number of years. Many animals can provide their own food almost immediately after birth, but it has been noted that the very inferiority of mankind in the fixed elements of instinct is a condition of his superiority in power to learn. Because our instincts are indefinite, they are easily educated, modified, improved, adapted to new conditions. Man has a very long infancy, extending in all to about 25 years, far longer than the infancy of any of the lower animals. This means that human skill is not naturally perfect until this age has been reached, and the fact that it is not perfect enables us to learn new forms of skill much better than we could otherwise have done. Thus the acquirement of skill in mankind is often a life-long process. Man retains his adaptability; he admits of training to a far greater extent than the lower animals.

Skill is Efficient Habit

Skill is fixed in the nervous system. This accounts for the fact that we can carry it about with us, and that it is so easily and surely recalled. The central parts of the nervous system—that is to say, the brain and its continuation, including the spinal cord—are very intricately constructed, so much so that the countless nerve cells, nerve ends, and fibres enable

a vast number of experiences to be registered in a permanent way. No mental operation goes on without some change in the central nervous system, and an injury to one part of the brain will sometimes cause the loss of certain mental powers, such as speech, without seriously affecting the others. Every experience which we undergo causes 'messages' to pass along the nerves to the brain, with the result that the mind is called to action; and 'messages' are usually sent back along the nerves, requiring certain movements or adjustments to be made. Skill results from making the nervous and mental adjustments automatic and mechanical, so that they occur without friction and without loss. The first time we learn a musical chord we do so at the cost of a certain amount of mental effort. There is not yet a fixed brain-path corresponding to the intricate operation of seeing the chord, interpreting it, and striking it. In learning the chord we may make mistakes, but at length the whole process becomes mechanical. We then have attained the ease, economy, certainty and speed which are characteristic of skill. Thus the problem of producing skill is identical with the problem of forming habit, and of making mechanical adjustments which previously required concentration of attention and involved liability to error.

Relation of Feeling to Skill

In order to acquire skill, it is desirable to start with a certain amount of feeling. Feeling is the head of steam which makes us move; lacking feeling, we are apt to lack activity. Who is not familiar with a type of person possessed of exceptional mental power, but not caring sufficiently to exert himself for the want of feeling? Feeling is the head of steam which sets our organic mechanism in motion; hence if we wish to become skilful we need to care about the thing in hand. We should start with a strong initiative. The pupil should come to his work full of enthusiasm; and it is all the better if other people maintain an interest in his progress. Hence the first thing is to see that the motive for

work is present. Without feeling, the intellect is as useless as a rudder to a vessel without power. Before giving a lesson, one may wisely spend a little time in arousing feeling about the work in hand. Feeling appears to deepen the nervous impression; it causes a more definite 'channel' to be wrought in the brain, one more easily followed whenever the experience is repeated, and more readily responsive to a gesture of the will.

Avoidance of Mistakes

Another principle of imparting skill is not to admit exceptions. Every time an exception is established we risk the commencement of a wrong habit, which upsets the effect already gained. To strike a chord correctly a number of times produces a result upon the brain and upon the nervous system which may be marred by striking it once wrongly, because the new habit may be continued in place of the old. We are familiar with the damage done by making exceptions in the case of a person who is trying to attain 'skill' in keeping sober. A single exception seems to make more difference to the habit than might have been anticipated. Therefore, in teaching to be skilful, try to avoid letting the pupil do anything wrongly. Some teachers hold that pupils should be allowed to make mistakes, see where they are wrong, and correct their own errors; but this is not the best way of producing skill, for the simple reason that each exception sets up, as it were, a rival kind of skill—and a wrong kind. A teacher trying to promote skill in spelling should not allow children to see the wrong forms on the board, or to say the wrong forms in guessing at the spelling; and a teacher of music should try, as far as possible, to keep a pupil from playing wrong notes, since each thing done wrongly tends to establish a faulty channel of nervous communication.

Practice

A third factor in promoting skill, and, indeed, the most important of all, is repetition or practice. What has already

been said will show that practice is not the only thing to be considered, although we often speak as if it were. Practice involves a retracing of the same brain-path and nerve-path, with the result that it becomes more and more fixed, and an identical stimulus tends to induce the same reaction. One should seize every opportunity of repeating. No habit, perhaps, can be formed without a number of repetitions, but the number of repetitions required will be less if we feel strongly about learning, and if we avoid making mistakes. Hence the careless pupil needs to practise many more times than the diligent.

How, then, shall we proceed in order to give a lesson the object of which is to promote the acquisition of skill? In the first place, we shall see that the pupil cares about the work, and if motive has not been established, we must try to establish it. In the second place, we must give any preliminary information that may be needed in order that the pupil may proceed with the work. Perhaps some plan of the work or some explanation may be necessary. The next step is for the pupil to carry out the plan or design. In so doing he must commit errors, and it follows that we teachers must correct those errors, although we may try so to arrange the work that as few as possible shall have been committed. All that remains necessary is practice of the correct form, which must go on until an automatic result has been produced.

The Plan of a Lesson to Impart Skill

Let us consider almost the first lesson to be given to a class of young girls in needlework, namely, how to make a running-stitch, the object being not merely to demonstrate the operation, but to promote some degree of skilfulness. The teacher, it may be supposed, has provided herself with two pieces of scrap material, one already worked, the other for purposes of demonstrating the process to the class. In addition, the teacher has brought needle and coloured thread, such as may be expected to show clearly on the material.

Motivation

The teacher may introduce the lesson in any one of several ways. She may say: 'Now, children, this is an example of a running-stitch; I want to show you how it is done, and afterwards I wish to see if you can do it yourselves.' This procedure relies upon the instinct of imitation, and no doubt a moderately successful lesson might be conducted along the lines indicated. On the other hand, the teacher, desirous of creating sufficient interest at the outset to provide a momentum which will continue throughout the lesson, may come armed with a variety of examples, showing the running-stitch in gathers, seams and fancy-work of varied and attractive kinds. By this means not only imitation but artistic taste and ambition are enlisted as the teacher's allies. A third method of introducing the lesson might be preferred even to this, or might be combined with it. The children are shown how to make doll's clothes, which will involve the running-stitch, care being taken to impress the class with the fact that the clothes are to be taken home, and that the pupils' parents will wish to see how well their daughters can sew. At times the 'running-stitch' lesson has been given in connection with making aprons for the pupils themselves, the running-stitch being employed at the sides and on the pocket. Even this beginning would be regarded by some enthusiastic teachers as not sufficiently skilful. A fourth way might be preferred; the teacher might aim at placing the children in such a situation that they find themselves compelled to make running-stitches in order to satisfy their own projects. Perhaps the class is led to decide that next sewing lesson shall be 'bonnet day', when a folk-dance is to be practised for which each child is to wear a bonnet made at home by herself. It is explained that the folk-dance will necessitate the bonneted girls forming an arch with their arms, each pair passing beneath while the others sing. A very good beginning would be a combination of the third and fourth incentives which have been indicated. This first step, the beginning of the lesson, may be described as *motivation*, the class

having been induced to want the work in which the teacher desires that they should become skilful. In general, once children have begun to feel conscious of a need to attain certain skill, or to perform operations which will lead incidentally to such skill, there can be little doubt that the lesson will meet with success.

Plan

The second step, after the lesson has been introduced so artistically that the children possess sufficient incentive to whet their desire for the work, is to plan out the operation that is to be performed. The planning may take several forms—(1) a demonstration of examples already worked on material, (2) a verbal explanation backed up by a black-board diagram, or (3) an exposition of the various uses of the running-stitch, followed by (1) or (2). Frequently the plan of a lesson in which the object is to impart skill will entail both preliminary verbal explanation and practical demonstration. Not only does the teacher show the previously prepared samples; she also works one in front of the class. There is a difference of opinion as to whether the examples shown or worked by the teacher should be done on a magnified scale easily visible to the whole class, or merely on the same scale as the children are to employ on their own samples. If the teacher's object is simply to explain a principle, large-scale demonstration may be regarded as preferable; but it may well be supplemented by passing a normal piece of work round the class.

Execution

The third step is the execution of the work by the pupils. The information that has been given must be applied, and the demonstration must be imitated. The class is still a long way from having become skilful in the running-stitch, but has begun to carry out the plan that has been adopted. Like motivation and planning, the step of execution is essential to a skill or habit-forming lesson.

Correction of Errors

A fourth step has now become necessary. Since repeated expressions of a faulty form are liable to develop into wrong habits, it is undesirable that the children should be given much uninterrupted time in which to execute the work. The teacher interrupts the operation before it has proceeded very far, using discretion as to whether the whole class should be stopped at once, or whether each individual should receive attention in turn. The fourth step, evidently, involves the correction of mistakes. Such corrections may be carried out either by the pupils themselves or by the teacher. Where, as in the 'running-stitch' lesson, the errors lie patent to the pupils' eyes, the teacher may compare her own pattern with the child's work, inquiring, 'What is wrong with your apron?' Errors corrected by oneself tend to disappear with comparative readiness. In many lessons involving the production of skill, some errors are obvious to the teacher alone. In the latter event the pupil's own emendations may be supplemented by those of the teacher.

Repetition of Correct Form

The fifth and most essential step is practice of the corrected form. This practice may have to be interrupted from time to time in order that the step of correction of errors may be repeated; but subject to this limitation it should proceed for a considerable time, and may be expected to result in a greater or lesser degree of skill. The aprons employed for the running-stitch lesson should have several joins to be seamed, in order that sufficient exercise in the new accomplishment may be provided. The familiar mottoes, 'Repeat without ceasing' and 'Practice makes perfect' express the value of repetition in promoting the formation of skill and good habit.

Application or Function

While the stage of practice on correct lines may be said to complete the process of acquiring skill, it is clear that so

much repetition would not have been justified if it were not intended that the acquired skill should be applied to various future uses. Hence the lesson on the running-stitch cannot be regarded as theoretically complete until various applications have been effected. These will have to be made either at home or in the course of future lessons. It would not be sufficient merely to talk of the ways in which a running-stitch may be applied, although a very short time is not likely to be misspent in so doing.

The 'running-stitch' lesson has been quoted as a typical illustration of the general form of procedure which is best adapted to the inculcation of skill. The formal steps of such procedure should include: (1) Provision of incentive, or *motivation*, (2) *plan and preliminary information*, (3) *execution of the plan*, (4) *correction of errors*, (5) *practice*, and ultimately (6) *application*. Although the step of practice may occupy the greater part of the lesson-period, does this fact in any way justify the teacher in being indifferent to the steps by which practice should be preceded?

Other Varieties of Practical Lessons

While the majority of lessons in which activity is emphasized are directed towards the acquirement of skill, there are many others, of no less value, in which skill remains a secondary consideration. These do not aim at specific habits, but have other ends. Among such lessons three types may be distinguished as necessary to well-rounded work. The aim of the first type is illustrative, of the second stimulative, of the third recreative. The following scheme of classification will be found helpful:

Practical lesson, for	(a) habituation
	(b) illustration
	(c) stimulation
	(d) recreation

Whereas *habituation* lessons seek to impart skill, *illustration* lessons are concerned not with skill but with throwing light upon theoretical work. When a class of children sets

to work to dress dolls as historical figures or types, such as those enumerated by Chaucer in the *Canterbury Tales*, the main objective is not skill in dressmaking but the clarifying of historical ideas.

By *stimulation* lessons we imply those active or practical lessons whose aim is to stimulate the processes of the intellect. They may not habituate the children to certain actions, nor illustrate ideas which have been already gained. They serve not to throw light upon the children's concepts, but to arouse their minds to efforts. Such a 'stimulation' lesson may take the form of the construction upon a sand-tray of a medieval manor, or the modelling of a railway station. No habits are formed, since there is no repetition of the pupils' actions; neither do these actions result in the production of life-like illustrations. The point of such lessons is that they are likely to stimulate the children to discover things for themselves and to persevere towards the attainment of the 'project' which they have taken in hand.

Recreation lessons comprise those which, although active in character, neither habituate, nor illustrate, nor stimulate to intellectual effort. Organized games fall into this class. They do quicken the mind, but being concerned with will and feeling rather than with thought, they may be discriminated from illustrative and from stimulative lessons. Teachers have been known to arrange relay races to and from the blackboard in order to enliven the process of totting up figures; on completion of his own list the chalk is handed by each competitor to his team-mate, and so the fun goes on. This is activity of the purely recreative type; but attention is focused upon the work of addition, and a healthy interest may be stirred by the introduction of variety and competitive speed.

Example of an Activity Lesson Not Directed Towards Skill

The lesson which is described below, although essentially active, by no means had skill for its object. It aroused interest, developed appreciation, expressed ideals of social

service, and prepared the pupils for self-education. The lesson abounded in facilities for free social intercourse.

The subject was botany, the class upper primary girls. Five groups were formed, eight girls being allotted to each. At the head of each group a captain was appointed. The teacher allotted to each group its work, and the captains saw to the efforts of individual girls. One group had planting to do. At the beginning of the lesson the proper way to set out and plant a flower-bed had been demonstrated, and this group was detailed to complete the process.

'Another group applied liquid manure to the Shakespearian garden, and watered it. This garden is interesting and the children are proud of it. It contains all the plants mentioned in Shakespeare's various plays, and children come in their playtime to water and weed it. They delve into Shakespeare in order to find some mention of a plant which they think they may have overlooked. Then there was the group that attended to the spraying of the roses. It was amusing to notice how the children darted here and there from one bush to another in search of aphids. The teacher walked round the various groups, now and then offering a word of advice; but the children on the whole did much as they pleased, and were quite contented. A lesson such as this helps the appreciation of botany greatly. But it must not be forgotten that there is an art in making such a lesson a success.'

Such lessons are planned like skill, or drill, or habit-forming lessons, except that little or no time is given to the step of practice.

CHAPTER IX

THE AFFECTIVE LESSON

IT frequently happens that in needlework, music, poetry and other fine arts, the object of the teacher is to cultivate appreciation of beauty rather than to establish practical skill. For example, the sewing-teacher encourages taste in colour, form, stitchery and materials. Children may learn to select beautiful combinations of colours, to put together their own designs, to appreciate specimens of fine lace which they may never be able to make for themselves, and to select materials with taste and discretion. Usually the teaching of appreciation will occupy a part rather than the whole of a lesson period, although in poetry or music a whole lesson may profitably be devoted to this end. Occasionally lessons are given with the object of affecting moral character rather than æsthetic taste.

Creation of Atmosphere

While the steps to be taken in developing appreciation of beauty may vary according to the subject, the occasion, and the gifts of the teacher, yet some guidance may be offered as to the general type of procedure which many teachers have found to be effective in bringing about the desired result. In the first place, a favourable atmosphere is essential to success. The class must be quiet and interested. This condition may be effected in many ways; but the essential point is that taste can only be developed in a suitable environment, calm, quiet, undisturbed.

Presentation

The second step, inevitably, is the presentation of the material to be appreciated. This stage is all-important. The teacher himself must have appreciation in order to impart it. The material must be presented with all the art that he has at his command, be the subject poetry, prose, literature, music, fine needlework, or pictorial art. Taste is contagious; it is

propagated in a subtle and indescribable manner, and scarcely ever can it be conveyed by an operation of the intellect alone, lacking the reinforcement of feeling and emotion.

Contemplation

Following the step of presentation, which should be thoroughly artistic, a pause may be allowed for the pupils to engage in contemplation. For when the poem has been read, or the object of art revealed, there should be no haste to proceed to an analysis of the effect which has been produced.

Expression

Many teachers hold, with some appearance of reason, that at this point a lesson aiming at appreciation should end. The effect, they allege, will be destroyed whenever a process of expression, analysis and judgment is permitted to supervene. There seems, however, to be little if any objection to the continuance of the lesson along such lines. Feelings are not by their nature permanent; their purpose has been served, as a rule, almost as soon as they have been experienced. It is enough that a pause should have been provided in order to admit of their brief but uninterrupted sway.

If this view be accepted, the next step will involve the free expression of opinions and sentiments on the part of the pupils. This may serve at the least as an antidote to sentimentality. Subsequently other expressions by pupils may follow a lead or guidance given by the teacher. For example, he may induce them to examine the effects produced in a picture by the artist's employment of light and shade.

Selection

Another step may be added; that of selection. Since taste and appreciation are as much in need of education as cognitive ideas themselves, it follows that they should be exercised and trained. This can best be effected by giving an opportunity to the children of using their own powers of judgment and choice. What part of the poem, or of the story,

do you like best? Which specimen do you think the most beautiful? Is this picture as fine as that? These are surely legitimate questions; and even if they should tend in a very slight degree to efface the impression of beauty which has, one may assume, been produced, yet that impression was never designed to continue in the forefront of the pupils' attention. The pupils can appreciate beauty without the necessity of meditating all day upon the impression which beauty has created; and however crude their power of judgment, they should begin to exercise it.

Critical Appreciation

It may be advisable, none the less, to return at the conclusion of the lesson to the appreciation of a work of art as a whole. After expression and analysis have had their turn, the poem may be re-read, the picture again contemplated in silence, the music played over once more. The difference in the attitude of the pupils' mind is that the feeling which they have formerly experienced unconsciously they now experience consciously and with an informed taste and understanding. The lesson ends as it should in an appropriate satisfaction, namely, the refined and purified feeling induced by the object of art or nature. Once more the beauty of the object is felt in its totality.

Example of Creation of Atmosphere

Being the fortunate possessor of a good voice, an adept teacher employed it on one occasion in order to establish an atmosphere favourable to the appreciation of a poem. The poem was a Spring Song. Standing well out before the class, the teacher sang the note 'doh' firmly and strongly. He showed the class that this firm and loud note would serve to illustrate the tone of a speech attributed by Shakespeare to Henry V at Agincourt, which he skilfully recited. It was easy to draw from the pupils that such a note would not befit the Spring Song.

Then 'fah' was sung as a sad note. To fit this note, a melancholy stanza describing a situation of cold and bleak

suffering was recited. The class considered that 'fah' did not illustrate the mood of the Spring Song, which was gay and happy.

The teacher broke abruptly into a happy note, 'lah!', and applied it to the Spring Song. All agreed that this was a joyful note, suited to the poem, not strong like doh nor sad like fah, but a happy burst of music. The method depended not merely upon the selection of the notes, but even more upon the manner in which they were sung; but the class enjoyed the pleasant novelty in technique, which served its turn admirably as an introduction to an emotional appreciation of poetry.

Appreciation of Classical and Romantic Music

There are certain arts for the appreciation of which no ability of performance is needed. One such art is cookery; another, it is generally admitted, music. While musical performance may be expected to reinforce appreciation, yet appreciation is in itself so desirable and necessary to cultured living that in some lessons it becomes the chief objective of the teacher. In the lesson described below the teacher's object was to help pupils to appreciate classical and romantic music, and the broad distinction between these two types.

First, before the lesson began, the class was required to be perfectly quiet. A disturbed class without was also asked to be quiet, so that the children were in a position to appreciate music to the full.

As the lesson was to be on 'Romantic' and 'Classical' music, the meaning of each term was first made quite clear, so that the children were enabled to appreciate the nature and scope of the inquiry. Romantic music was said to be music which is novel and picturesque, while classical music is music which has stood the test of time and is still loved by all.

The teacher showed that there can be music with words, which is at the same time romantic and classical. To illustrate this point, the class sang 'Ariel's Song' and 'To Sylvia', songs both romantic and classical. By furnishing these illus-

trations, the children took an active part in the lesson. The idea that the class contributes to the lesson is one which will always evoke interest.

The next step was to discuss music (with words) which is romantic only, i.e., it describes life in a certain mood, and thus carries a romantic suggestion. The class illustrated this type of music by singing 'I wish I were a tiny bird'. The tone and quality of the children's voices and the expression put into the song revealed a good training and a thorough understanding and appreciation of music. It was readily perceived that this song, however appropriate to a given mood, could not live. The class was already beginning to grow tired of it. Next, the teacher went on to discuss music without words, which she called instrumental music. She added a brief account of the development of the piano.

Then, as an illustration of instrumental music which is both romantic and classical, the teacher gave her own rendering of Chopin's 'Raindrop Prelude'. First, she told the class how Chopin had listened to the raindrops one night when reading in his room, and how what would to the ordinary person have suggested only rain, to him suggested music, so that he set about writing this beautiful prelude. The children listened eagerly, and at the end said that they loved it. The teacher then illustrated instrumental music which is classical but not romantic, by playing on the piano the 'Prelude in C Minor', by Chopin. There was no doubt that the children thoroughly enjoyed this music lesson, for they sat listening intently throughout the whole period, and were very keen to answer questions. Thus what would have been, in the hands of some teachers, a dull, uninteresting lesson was made very enjoyable and at the same time highly instructive.

Poetry in the Classroom

In the *Educational Outlook*, Volume IV, No. 2, there appeared a very interesting article by Professor Dora V. Smith, entitled, 'The Presentation of Poetry in the Classroom.' By kind permission, a part of this article, describing

a lesson upon a familiar poem of Robert Browning, is quoted at length. The procedure manifests a high degree of technical perfection.

Let us consider a lesson on Browning's 'How They Brought the Good News from Ghent to Aix,' a poem which many teachers dislike to teach for several reasons: It is difficult; pupils object to the fact that the poet fails to tell what the news is; and they remonstrate against a horse's running ninety miles in fourteen hours without stopping.

The first step in the lesson is an approach to the children's experience:

'How many of you like horses? How many have ever gone horse-back riding? What do you like about it? How does it feel? What makes it exhilarating?'

After a lively conversation and exchange of personal experience, the pupils are in a mood to be interested in the poem.

'This poem,' the teacher tells them, 'was written by a man who lived in London. Unlike many poets, he preferred the city to the country. He enjoyed art galleries and theatres and concert halls, but most of all he liked horse-back riding. He knew horses well, had pet names for his own horse, York, and rode much in the city parks, where roads were furnished for riders.' (The teacher shows pictures of Rotten Row in Hyde Park, and lets the children talk about them.)

'But as Browning grew older, he spent much time in Italy, when, of course, he had to leave his horse at home. People went by boat from London to Italy in those days, and the journey was a hot and tiresome one through the Strait of Gibraltar and across the Mediterranean Sea. One day, as Browning lay in his steamer chair, reading, he dropped his book in his lap, and looked dreamily out across the hot, still waters. What do you suppose he was thinking of?'

The pupils responded in chorus: 'His horse! Wishing he was horse-back riding!'

'All of a sudden he had an idea. He picked up the book and began writing in the cover of it a poem that would make him feel as if he were on horse-back. He called it "How They Brought the Good News from Ghent to Aix." A curious thing happened. He was so much interested in the feeling of the ride that he didn't tell us what the news was! That wasn't nearly so important to him as the swish of the wind and the gallop of the horse that he loved. Now let's read it and see whether it really makes us feel as if we were on horse-back.'

The teacher reads briskly the first stanza, tapping on her chair to accentuate the gallop of the meter. Certain boys bounce in their seats

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as though they were galloping, too. The pupils note how fast the riders were going (the walls echoing 'speed'); they see three riders starting out together from a medieval town (behind shut the postern) into the night. 'It is more mysterious,' they say, 'to gallop into the *midnight*.' Now that the background is established, the teacher reads right through to the end of the poem, the suspense culminating in the all but insane excitement of the rider: 'Then I cast loose my buff-coat, each holster let fall,' and the sense of terrific exhaustion in the sudden hush of the closing lines. No one who really loves horses can read those last two stanzas without evident emotion.

The first question is, 'Was the poem a success? How many felt the gallop of the horse? Which stanzas made you feel it best?' Then a matter of unique interest is, 'What lines in the poem show that Browning knew and loved horses?' The pupils are eager to point out illustrations—stanza II, where the rider shortens the stirrups and tightens the girth while the horse never slackens his gallop; the last two stanzas, where he eases the harness, calls his horse by his pet name, and exults in his triumph; and finally, stanza V, that matchless example of sympathetic understanding between horse and rider.

Akin to this will be the discussion of how far the horse ran, how long it took him, and whether or not it was possible for a horse to perform such a feat. That Browning realized it was well-nigh impossible is illustrated by the fact that two out of three horses died in the attempt, and the third, almost at its last gasp, was heralded as a hero.

The teacher of English is interested in making boys and girls conscious of the qualities of greatness in a poem without at the same time interfering with their emotional reaction toward it. Certainly with most of them the interpolation of the jargon of literary criticism would be fatal. How can the thing be accomplished? Perhaps in some such way as this. 'When you are riding on a train,' says the teacher, 'how do you know you are going fast?' The pupils mention the swaying of the car, the clicking of the wheels, and the passing of the scenery. All of these devices apply to the poet's art—the rhythm of the gallop, the sound of the horse's hoofs, and the bits of description coupled with the passing of time. Ride poems are particularly valuable for teaching a sense of rhythm—not the number of beats to the measure and the number of feet to the line—but a genuine recognition of the appropriateness of the movement to the action described. Students delight in guessing the kind of ride these men were taking and the nature of the road over which they sped:

I sprang to the stirrup and Joris and he
I galloped, Dirk galloped, we galloped all three.

John Gilpin was a citizen
Of credit and renown,
A trainband captain eke was he
Of famous London town.

The highwayman came riding, riding, riding,
The highwayman came riding, up to the old inn-door.

In the first, they hear the frenzied gallop into the blackness of mid-night; in the second, the jiggling, humorous jog over cobblestone streets; and in the third, they need no author to tell them that 'the road was a ribbon of moonlight over the purple moor.' Finally, if their sense of patriotism will permit, they cannot fail to note the comparative ineffectiveness of the opening lines:

Listen, my children, and you shall hear
Of the midnight ride of Paul Revere.

In regard to the passing of time and scenery, Browning does not take time to say with Longfellow, 'It was two by the village clock.' With him the fitting of time is but an incident in the passing scene: 'As a great yellow star came out to see,' or 'the broad sun above laughed a pitiless laugh.' Boys and girls appreciate the concreteness of the expressions. They can also see the pictures, especially the one so familiar from the Pullman window at night:

At Aershot up leaped of a sudden the sun
And against him the cattle stood bright, every one,
To stare through the mist at us galloping past.

In the end the teacher wishes to leave the poem with the total impression uppermost. She considers with the pupils what they find to be the dominant notes in any 'exciting ride' composition. Speed and excitement, they know from experience with the theme. 'At the time,' she tells them, 'when Browning wrote this poem, he was engaged to be married to Elizabeth Barrett, one of the best loved poetesses in England. She had much more reputation as a poet than he had; hence he frequently sent copies of his poems to her in his letters, and nothing pleased him so much as a word of praise from her. When she found this poem in her letter one day, she wrote back her congratulations at once. She felt the excitement of the ride in every line; "but," she said, "there is one stanza in it worth all the rest of the poem put together." I wonder if you could guess which it is.' The answer is, the first stanza, but that is not nearly so important as the child's final judgment after reading the poem.

Every successful lesson in poetry stimulates a desire for more of the same kind. The test of genius in story-telling is the impulsive response of the little ones, 'Tell it again!' or 'Tell us another!' For

that reason it may well be a part of the teacher's preparation of ; poem to provide a list of other verses of the same sort for further reading by boys and girls. Baldwin's *Fifty Famous Rides and Wonder Book of Horses* will provide ample suggestions. Some which may well accompany Browning's 'Good News' are as follows:

- Benet, W. R.—'The Horse Thief.'
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 Goethe, J. W. von—'The Erl King.'
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 Lomax, J. A.—'Songs of the Cattle Trail and Cow Camp.'
 Longfellow, H. W.—'The Leap of Roushan Beg'; 'Paul Revere's Ride.'
 Kipling, R.—'The Ballad of East and West.'
 Noyes, A.—'The Highwayman.'
 Read, T. B.—'Sheridan's Ride.'
 Scott, W.—'Lochinvar.'
 Tennyson, A.—'The Charge of the Light Brigade.'
 Whittier, J. G.—'Skipper Ireson's Ride.'

There are enough of the easier variety so that pupils may practise reading them aloud at home and entertain the class with them at the next meeting.

Scope of Appreciation

While a poem may be the chosen means wherewith to develop appreciation, so may other subjects. Nature, Scripture, develop taste; narrative and drama should be taught with as much appreciation as poetry. Music, pictures, drawing and painting ought to contribute to the highest enjoyment of life. Appreciation is generally considered as their life-blood, and, in school, let it be cherished. But, however varied the subjects may be in which taste is cultivated, the teacher's plan of procedure will tend to approximate to a standard pattern, that which has already been outlined. Children appear to appreciate the grotesque before the beautiful, comic papers before exquisite etchings, gargoyles before statuary, the 'Hunting of the Snark' before Gray's 'Elegy'. Yet, provided that the principles of pedagogy be respected, the child's appreciation of an object in any one medium can be

transferred to any other object in the same medium. 'Give me a child who likes caricature,' cries the teacher, 'and I will undertake to interest him in harmonious pictorial art.' Just here a difficulty arises. Some appreciation may be too deep—or too indefinite—for words. Can it be transferred? Is not the impression left by a nocturne of Chopin or a tale from Hans Andersen complete in itself? Let the teacher withhold his sacrilegious hand. But some degree of form may be given to feeling, however deep or indefinite. An ideal may be erected; and this ideal becomes a fulcrum on which the child's inspiration, like a lever, may rest when new obstacles are to be moved.

'Emotion' Lessons

Although the majority of lessons during which the teacher aims at producing a certain type of feeling may be described as 'appreciative' lessons, there are occasions on which emotions and sentiments, as well as taste, may have to be aroused. A tragic poem, story, song or drama should exercise emotions of pity and fear, and should purify those emotions by attaching them to their proper objects. The teacher who objects to such emotional awakening should let certain subjects alone. It is better not to touch upon the story of Richard III and the murder of the princes in the tower than to approach the theme with callousness. Pupils should scorn an Iago and pity a Desdemona. The fate of a Cordelia or of an Ophelia should be permitted to tap the deepest well of human sympathy. Wisely applied, there is merit in the Aristotelian doctrine of Katharsis. By living through the grand sorrows of others, even of fictitious characters, our emotions tend to be purged of their grosser elements and elevated into a purer region. If the natural emotions of children are never to be aroused in a noble connection, how shall these emotions be disciplined? For a teacher to arouse undue affection on the part of pupils towards himself, or to an unworthy object, would be the grossest breach of professional ethics; but it does not follow that he should avoid arousing emotion of any kind, under any circumstance. No amount of Anglo-Saxon

that reason it may well be a part of the teacher's preparation of any poem to provide a list of other verses of the same sort for further reading by boys and girls. Baldwin's *Fifty Famous Rides and Wonder Book of Horses* will provide ample suggestions. Some which may well accompany Browning's 'Good News' are as follows:

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phlegm should tempt us to despise the French ideal of an *homme de cœur*. The ideal of life is not the elimination of feeling, but a discipline of the emotions through the formation of appropriate intellectual complexes in connection with our feelings. In his own life a child may experience trouble, sorrow or despair; this is the time to address him individually, so that his thoughts may be guided to an appropriate solution of his difficulties.

Exhortation

It makes one shudder to think of a whole lesson given up to exhortation. The school is not the place for sermons, and long speeches are ill-advised. Yet it is to be lamented that the reaction against sermonizing has gone so far that many children are never permitted to hear a moral appeal. An occasional address with a moral purpose has an inestimable influence on the minds of those who understand it. If an unknown boy has been stealing flowers or fruit, if an unknown girl has done damage to school property, if the class is to plant trees for the benefit of posterity, an earnest exhortation may produce a remarkable effect. The address should be short, direct and pointed unmistakably by simple illustrations. Is an extempore effort the best? Is it enough to allow a free career to the teacher's inspiration? The answer seems to be that the teacher, like the clergyman, does well to weigh and consider what he intends to utter. His oration should have a beginning, a middle and an end. The beginning may be an explanation; the middle an earnest appeal to sentiment, followed by an opportunity for the pupils to give their judgment, with selection and assent; and the end a practical application, involving free volition and action on the part of the pupils. An exhortation on the subject of tree-planting would involve (a) an explanation of the idea; (b) a stirring picture of the benefit to be done to others, with an illustration or two of what has been achieved elsewhere; (c) 'putting the question' with the sure expectation of an ardent affirmative; (d) an adjournment to the

scene of practical operations, followed by a short plan of operations, coats off, and much digging.

'Sentiment' Lessons

If any doubt remains as to the advisability of stirring children to emotion, there can be none as to the need of inculcating sentiments. Sentiments for home, school, duty, church and country are a part of the normal equipment of a good citizen. If some of these sentiments may be left to the care of other agencies, none should be contaminated or unduly shocked in the course of school life, while several should be explicitly cultivated in the school itself. A sentiment has been defined as 'a state of mind in view of some subject'; a 'feeling toward or respecting some person or thing', a 'disposition prompting to action or expression'. Evidently, a sentiment is not a mere intellectual opinion, but rather a mental complex infused with latent force. This force is of the nature of feeling; it is feeling which provides the power, the head of steam, that moves the human mechanism to action. Since feeling is highly contagious, nothing makes a teacher so efficient in promoting either taste, or purified emotion, or worthy sentiment, as the possession of these qualities in his own right. Sentiment differs little from taste, but the former term implies a moral quality to a greater extent than the latter.

To form a sentiment, such as love for one's school, one's country or one's mother, a great mass of ideas has to be combined with the affections in such a way as to give them durability, permanence and order. Hence a sentiment may be developed chiefly through a process of association of ideas. Standard symbols such as the national flag may be used to provide universalized centres or cores for such a process of association. The broader and the more rational such associations may be, the less is the likelihood that a sentiment will degenerate into a set of narrow-minded prejudices. For, like all varieties of feeling, sentiments may be easily abused. They give form to the personality of an individual, and

thereby reveal his limitations as well as the strength of his convictions. Lest the limitations become too prominent, the narrower sentiments should be held in balance by the broader, such as humanitarianism and reverence.

Success in instilling sentiments usually depends upon the possession of them oneself. But neither in oneself nor in the pupil should sentiment be divorced from action. When such a condition is found, it is described as 'sentimentalism' or 'sentimentality'. Let the sentiment be one of brotherhood. The teacher tells the parable of the Good Samaritan. Other illustrations of loving-kindness are obtained from the children. But as the Samaritan acted, so must we. What can our class do to help our sick brothers? The girls decide that during the sewing-period each will make one garment for the poor; the boys that on every opportunity they will guide a blind man across a street, and that on a given date they will bring flowers for the local hospital.

In order to inculcate a sentiment, then, the teacher should first of all contemplate its manifestation within himself. He is then in a position to arouse feeling, utilizing some visible symbol if possible, such as a suitable picture; and with the aid of the class will find apt illustrations and awaken or create well-balanced associations. The lesson remains incomplete until an outlet has been found for the sentiment in action. There is great need for the education of the sentiments. 'Stealing by finding' indicates a defective, 'gang warfare' a debased sentiment. In the schools of the future a wiser generation will have fewer of the informative, more of the 'affective' lessons.

CHAPTER X

PREPAREDNESS

See to Hygienic Conditions

BEYOND co-operating with the home and with the medical service in seeing to physical defects, the teacher has to take children as he finds them. But if the children's original nature lies beyond his reach, it is not so with their environment. He can do much to secure cleanliness of person, schoolroom, desks, pencils, pens and books. Let him not be deterred from well-doing by obstacles, even such as the retort of a parent to the suggestion that her child should be washed: 'Larn him, don't smell him.' He should see that litter and chalk-dust are minimized. It is incumbent upon him to study lighting and to secure adequate ventilation. A very bright light is undesirable, but a dull light involves eye-strain. Preferably, windows should be to the left of the class, and the light may be improved by the adjustment of curtains or by frosting. A constant flow of air without draughts is desirable, the windows being kept open top and bottom, but the sill preferably higher than the children's heads. Desks must be suited to the stature of the pupils; it is a mistake to have them all of the same size. In one school in a crowded industrial area the teacher gives a short health talk every morning. The pupils are asked: Who has cleaned his teeth? Had a bath? Slept with his window open? No fault is found with those who do not respond, lest a premium be set upon lying. At lunch-time all are offered a glass of milk, a distributing company having undertaken this service without charge. Under proper regulation, breaks of a few minutes may be allowed between lessons.

Choose Material of Real Value

With the object of making the school an integral part of the pupil's life, rather than an institution lying outside it, the teacher should aim at the selection of material both useful

in itself and relevant to the pupil's natural activities. In hygiene he will prefer common to medical terms. In arithmetic he will quote the price of sugar at something like the current rate. In sewing, articles will be made that the girls can use.

At the age of six, a small boy went to school. He progressed through the infant school, until at about eight years he entered the third class. His teacher was a man of rather old-fashioned ideas, who gave his pupils sums of the type that require great concentration and arduous and efficient mechanical work. An instance is: 'Reduce two tons and thirteen pounds to ounces.' The child, seeing no sense in the operation, cordially hated the subject.

The child's parents moved to another suburb, and the new school provided a teacher with more modern ideas. The children kept a play shop. By this means they became familiar with money, weights and measures, and made calculations that were interesting, reasonable, and relevant to the uses of life. The child became a good and accurate worker in arithmetic.

The criterion of value must be applied not only to minor elements of the curriculum, but to subjects and branches of subjects as well. Why should girls learn algebra? And, in general, how shall we answer Herbert Spencer's question, 'What knowledge is of most worth?'

Have All Materials Ready

It is idle to begin to collect materials after the work has commenced. To take an extreme case, the teacher in a city school finds that her lesson should be on the transpiration of leaves, but she has neither leaves, trees nor a garden at hand. The lesson-period is not a time for making preparations, but for education of the young. It is almost incredible how much time has been wasted by simple want of preparation. The class becomes restless and unsettled, discipline is lost, and the respect of the children for the teacher's efficiency may be forfeited.

Arrange Instruction Carefully

It goes almost without saying that the teacher should carefully prepare his work. A great part of efficiency in learning depends upon skilful arrangement, and as pupils cannot be expected to excel in this direction, it is a part which devolves primarily upon the teacher. Arrangement of work depends upon several principles, among which may be specified adaptation of the work to the mind of the child, logical order where such does not conflict with psychological, selection of important aspects, subordination or elimination of minor details, and movement from the simple and easy to the complex and difficult. Through systematic blackboard schemes made by the teacher with their co-operation, and especially through the practice of making brief summaries of history, geography and other lessons in their notebooks, many of the pupils will gradually develop that power of analysis and selection which is, perhaps, the most distinctive mark of a good student.

Suit Instruction to Capacity

In arithmetic, it may be better to ask some such question as this: 'If your mother gave you so much and asked you to buy a lettuce for so much, what would you have left?' rather than simply to say: 'We will now take exercises in the calculation of money.' The wind should be tempered to the shorn lamb. The youngest class in history does not learn the provisions of Magna Charta, but hears the story of the strife between King John and his barons and sees a picture of the signing of the Great Charter. Capacity is influenced by home environment; thus country children understand better about animals, and city children about factories. Never let the course of study include elements beyond the natural range of the pupils' capacity, such as fine embroidery or advanced philosophical argumentation. At the same time, it should be remembered that to teach below the pupils' standard is even less excusable, since nothing can be more detrimental to the development of intellectual power. Every good

teacher must rise above the level of the obvious sufficiently often for the pupils to realize that he has something to give them.

Allow for Individuality

One of the chief dangers of schooling is that it may starve the imagination of individual children by limiting their interests and ambitions. A young child who is already addicted to art or to poetic composition is either laughed out of his interests or finds them crowded from his life by spelling and sums. It is worth-while to respect the ambitions of childhood, even when they seem most absurd. 'What is this that you are drawing?' 'This is heaven.' 'But,' objected the teacher, 'no one knows what heaven looks like.' Unexpectedly the child replied, 'They will know when I have finished this!' Behind her ridiculous claim lay a sublime confidence, the educational potentialities of which should not be esteemed too lightly. It was magnificent, if it was not art.

In his attempt to allow for individuality, the teacher is apt to be confronted by the difficulty of large classes. In such a condition he can at least meet the needs of individuals to the extent of varying his teaching methods, so that one method or another may become the means of developing an individual mind of any given type. Pupils may bring in their own contributions to geographical or other class work, pictures, newspaper clippings and specimens. They may manage part of the presentation of a collective lesson, especially if they have previously been allotted individual assignments. Besides the large class, another common obstacle to the fostering of individuality is the domination of a course of study by examinations, especially public examinations. In some instances nothing whatever is taught except what is expected to contribute to success in examination, an immoral limitation which cannot be too flatly rejected by the conscientious practitioner.

Make Problems Real to Children

Children live in a world of their own, and it does not follow that a problem about the importation of jute which

would interest a London merchant will have any significance for them. Often it may be better for young children to calculate realistically in terms of marbles or of cricket than to deal artificially with stocks and shares. Examples that are apt enough for a fruit-growing district may be inappropriate to a fishing village. Generally speaking, the children should see themselves as involved in a problem, not as external to it. In one school the playground has been converted into a map of the world, the land masses being shown in relief by means of concrete laid about three inches thick, in proper shape and with mountains in relief, distances being truly calculated on Mercator's projection. The playground, a large one, is not thereby spoiled for sports; but the children love to go from London to Sydney via Suez during their dinner hour, returning to London via Vancouver, Buffalo and New York. Some children place wooden ships, named after mail vessels, in their estimated places according to newspaper reports of sailings, each child adopting one ship and moving it onwards from day to day. Many other illustrations of 'real' problems will suggest themselves, or may be collected from various sources.

The work of the classroom should be done in something like equal partnership between teacher and class. The pupils should make their own notes, rather than copy those of their teacher. Debates, topical verses, imaginative maps, drama, magazine and newspaper cuttings, pictures, all may be employed to bring home the reality of portions of the curriculum to the mind of the child. To learn actively is to learn realistically. The teacher need not engage in the duplicity and chicanery of a Tom-Sawyer in order to have his fence whitewashed, for children, under wise guidance, are ready to invest any problem with reality. Historical characters may be made to live in the imagination; and geography should present a living pageant of people and the influence of environment upon them.

Appeal to the Senses

It was observed by William of Occam that all our knowledge comes through the senses. While this dictum should be modified, it remains true that, although the mind contributes something to knowledge which is innate and original, and does not come through the senses, yet sensations alone can furnish the *data* of knowledge. Hence the teacher must see that the children shall be well provided with sense-experience, without which they can have no real understanding even of what they think they know. How many people, for want of sense-experience combined with names, are unable to tell what jute or terra-cotta is? In schools the tendency is to rely too much upon the sense of hearing. It is better to appeal to several senses than to one only. Thus, in spelling, children should look, hear and write. If a word has to be learned, it should be both spoken and written; and if it represents a new object, this object when practicable should be handed round the class. In beginning arithmetic, counters and other objects are much employed; at a later stage, pound and ounce weights should be actually manipulated by the pupils before questions are given concerning them. Similarly, specimens are essential to the study of geology, botany, manual work, etc. Modelling increases sense-experience in such subjects as geography, as experimentation does in science. For want of sense-experience, many foolish mistakes are made; as when a pupil having heard of 'Moses in the bulrushes,' formed a vivid image of a bull charging madly upon the infant sage.

On one occasion, a class of small boys, having learned the multiplication tables from twice to ten-times, with the exception of the seven-times table, was taken into the playground, where twelve wooden pins had been set up in a closely-grouped formation. The class was divided into two parts, and a boy from each division in turn was allowed to hit a ball with a cricket bat three times at the pins. The scores were called out and added up by the boys concerned, each pin being reckoned at seven, so that, for example, four pins

knocked down were counted as twenty-eight. If any boy called a wrong score, the first to correct his call exercised the privilege of adding the total to his side. In half an hour it was difficult to pick holes in the knowledge which the boys possessed of the seven-times table.

As Milton puts it, 'discreet teaching' involves 'orderly conning over the visible and inferior creature.' Brightness and colour appeal to children; but subdued tones in pictures, dress, etc., are seldom appreciated. Good blackboard-writing and drawing teach more than many words poured into the ear; and the sense of hearing itself should not be abused by the harsh and inharmonious sounds of an uncultured teaching voice. Let pictures be good, and music bright, well controlled, and sufficiently frequent and varied. What has been seen, heard and felt becomes the standard whereby future experience is to be measured.

Understand Much, Memorize Little

Principles rather than particulars are of value; but it is always advisable that some particular illustration should accompany each principle. Little should be learned by rote; the great thing is that the pupil should understand what he does. Many examples should accompany each rule, and whenever possible the children themselves should make the rules as the result of their examination of a number of cases. After working many very easy examples in compound interest, the pupils will be able to draw up their own formula. Similarly, in sewing, the pupils should make their own foundation-drafts. Memorizing should only take place after the matter has been thoroughly understood and skilfully arranged. It is more important to understand the words, phrases and lines of a Shakespearian play than to commit much of it to memory; and the same principle applies to studies of all kinds.

There are some teachers who are so convinced of the value of understanding, relatively to that of memory, that they prefer to let pupils first attack each problem unaided, only

lending a helping hand when the children have done their best to arrive at the solution by their own efforts. The heuristic method—that of discovering laws for oneself—has been extensively applied in the teaching of science, and is only limited by the fact that certain ground has to be covered in a given time. Such a method ensures that progress is being made by intellectual comprehension and not by rote. Care must be taken while using this method that no pupil should be discouraged by tasks which exceed the range of his natural abilities.

Cultivate Conciseness and Smartness

According to Plutarch, the Spartans used to train young boys to answer briefly and to the point. Without expecting epigrams, it is well to recognize prompt and happy forms of expression, and to give occasional practice in this laconic style. Revision work in mental arithmetic, history, geography, English and other subjects should be invested with smartness and a suggestion of the value of time. It is a mistake, however, to spoil handwriting or ciphering by haste; and wherever the higher processes of thought have to be brought into play, as much time as is necessary should be ungrudgingly allowed.

Smartness in distributing books may so impress a class that it remains alert and responsive until the end of the lesson. Lest smartness degenerate into hurry, weekly tests should be applied. The teacher may thus discover the effects of undue haste, and will be in the position to remedy them. Present the subject-matter of instruction, and add illustrations and commentaries afterwards. Exceptions to this rule will reveal themselves, but it helps to keep the teaching parallel to the programme of work. To avoid waste of time, the correction of written work should be done in part out of class hours. Teaching-aids of a concrete nature may be permitted to consume too much time; but in the primary school, the danger lies generally in the neglect of them.

Eliminate Bad Company and Mischievous Books

It is an old but true saying that evil communications corrupt good manners. Through unworthy intercourse as much as through natural selfishness the moral failures of life are made. It is necessary, therefore, that the teacher should separate two boys or two girls in class where there is reason to believe that one has been exercising a baleful influence upon the other. Weaker natures are easily led by the company they are in; and a single pupil who happens to be indolent, selfish, unmindful of the decencies and courtesies of life, and inclined to flout authority, may become the source of infinite trouble unless the teacher 'keeps at him' in such a way that his classmates are disinclined to regard him as a hero. Special attention should be paid to those children who are born leaders; if these can be won over or guided in right paths the others will follow as water runs downwards.

Being a form of company, books, as well as people, may be desirable or undesirable. Without instituting too rigorous a censorship the teacher should discourage two kinds of reading: one of merely trivial material, involving waste of time, the other of sheer sensationalism, such as characterizes many cheap books which offer a false and perverted interpretation of school life or of criminal adventure.

Exercise Goodwill

It was John Locke who maintained that the four essentials in the education of a gentleman are virtue, wisdom, breeding and learning. Of these he deliberately placed learning last; and although himself an ardent scholar, he esteemed it least. Most of the schools of the present, like those of Locke's day, reverse the order, concentrating their chief attention upon learning. It may be for this reason, rather than from any inherent impossibility of realizing the other three ends, that modern societies are better endowed with intellectuality than with virtue, wisdom and breeding. If a prediction may be ventured, it is that the schools of the future will look back in horror and amazement upon the time when teaching was

almost blind to morals, practicality and manners, and when it proceeded as if little except learning was of value as an introduction to adult life.

Now virtue is not a matter of theory but of action. In good action, founded upon goodwill—the identification of the whole self with the deliberate choice of the highest motive—the principle of virtue becomes manifest. Therefore, it is essential, although often difficult, to provide occasions for the performance of virtuous, benevolent actions on the part of pupils. Beginning from the time when the infant is encouraged to offer his cherished sweets to those about him, or the boy to put down his hat and ball in order to economize his mother's strength by shelling peas, life should afford daily opportunities of doing good deeds. But too often the school tends to encourage individualism and selfishness, each pupil endeavouring to excel rather than to assist others. Who has not been punished for assisting his weaker neighbour in his sums? To invent opportunities for the performance of good actions by pupils involves considerable ingenuity on the part of the teacher. He may arrange that at certain times the pupils should help one another, and that occasionally some should have an opportunity of sacrificing a part of their play-time for the social good. At Honolulu, the school-children hold a picnic annually at Waikiki Beach; they employ the day in picking out treacherous fragments of coral from the frequented sands. To a school which the writer once attended, the children at stated times brought flowers from home for the sick in the local hospital. In the sewing-class each girl should make one garment to be given to the poor. Again, a little Italian child whose English is defective may be championed by a benevolent classmate against the insults of prejudice. Unselfishness with books, toys and implements should be encouraged. Pupils may see that drinking-troughs and crumbs are provided for wild birds, and that pet animals are properly cared for. In the play-field such an act as passing the ball may not be devoid of moral quality, and from time to time there will arise many parallel occasions for unselfish conduct.

Provide Opportunities of Social Intercourse

One of the main factors in education is intercourse, and it should be an important factor in schooling. As Locke remarks, the tincture of company sinks deeper than the outside. We should seek rather than avoid companionship, preferably of persons above ourselves. Since the teacher's company is often the best that pupils enjoy, it should be given as freely as possible. In the playground there are many informal talks, whose value is appreciated by pupils in later life. Within the school the teacher should find occasions for being companionable rather than magisterial. Let pupils talk about the things they see and do. They are learning to express ideas which they have gained by observation; they also have the opportunity to interest, and possibly to instruct, their fellows. Mild criticism of a fellow-pupil's talk is admissible. Individual work at school affords many opportunities of free intercourse, and at every stage there ought to be definite provision for such intercourse between pupils and teacher, and among the pupils themselves. In what factory are the employees forbidden to speak to one another? Yet this degree of self-repression is demanded of school pupils, contrary to the dictates of human nature. The kindergarten, it is true, brims with good-fellowship. It provides numerous games and co-operative activities; occupations are free, and there are no punishments. In the primary school free-choice periods, when introduced, encourage friendly intercourse; so do lecturettes and the practice of dramatization. In the secondary school, apart from sports and individual attention, the social period in which choral, dramatic, orchestral, photographic and other clubs meet is of the utmost value. It is under residential conditions, however, that intercourse is apt to wield its fullest influence, although sometimes the pupils thus thrown together may be too homogeneous to enable the process of mutual education to yield an ideal result.

The school represents a larger world than the family, and wider social relationships have to be formed. Why should

these be of a kind undesirable in later life, a magisterial pomposity on the one hand, an individualistic docility on the other? Lecturettes, debates, concerts and drama take people out of themselves, break down shyness, and draw the pupils into broad, democratic 'contacts' with one another, so that they have no desire to leave school.

Prepare Pupils to Take Over Their Own Education

If a class should merely wait until the teacher's back is turned in order to become riotous, it is still far from the stage at which the pupils are ready to take over their own education. Habits of study without compulsion, under the impetus of the pupils' own desire and interests, should be established at every opportunity. It was recognized by Aristotle that among the aims of education must be reckoned the right use of leisure; and to this end it is particularly desirable that some subjects should be studied for their own sake, so that their pursuit may not be discontinued, even at a time when school-days lie far behind. Children who have learned to love good literature and music have an advantage over others in this respect; but hobbies of a practical kind, such as wireless telegraphy or carpentry, will serve the same purpose, in so far as taking over one's own education is concerned. Mental, moral and physical development, for better or for worse, continue beyond the stage of schooling, and pupils should be well equipped with ideas and practices that are likely to guide them on a satisfactory course, once the rudder of life has been placed in their own hands. Pupils should be entrusted with many subsidiary powers in order that they may learn gradually to guide themselves.

On account of the teacher's poor presentation, numbers of school pupils do not persevere in their work; on leaving school, they go no farther, and most of what they have learned is forgotten. This does not happen when they are given ample opportunity to present information themselves. Pupils will gladly spend hours in searching the daily papers for material for their geographical scrap-book, or in reading

geographical and historical articles, or in drawing maps to illustrate what they have read. Thereby their outlook on life becomes enlarged; they educate themselves, and the habit of 'finding out' tends to persist. Why teach as if their education were destined to become complete in the last class-hour at school?

If pupils on leaving should be ready to take over their own education, then they should be equipped with a power to express whatever they learn in words and deeds, and above all, with an incentive to study. In the following illustration two types of teacher are delineated:—"I once had a teacher in chemistry who so infused interest into his subject that we were not content to listen to what he alone said on the subject, but were prompted to delve for knowledge ourselves in sundry scientific books. But I also remember having been taught geography by a teacher whose "method" was to give out about fifty place-names. At night we would hunt over maps in search of appropriate locations. When found, these locations had to be memorized, so that to the question, "Where is Liverpool?", I could confidently reply, "In the north-west of England," only to be informed that this was not the Liverpool the teacher meant. I offer this example to show how lack of interest in a subject, mainly due to faulty teaching, led me to neglect taking over my own education, for to this day my geographical knowledge is very scanty.'

CHAPTER XI

SEQUENCE

Observe Suitable Times

COMENIUS founded his principles of method upon real or imagined uniformities of nature, and in the course of his helpful if somewhat confused analysis he did not fail to indicate the importance of choosing suitable times for instruction. Suitability of time should be recognized in several distinct connections. In the first place, let there be promptness in getting to work. While on no account should the teacher present information until he is sure that the children want it, little time need be occupied in establishing an incentive. For many purposes the teacher's own alertness of demeanour may be incentive enough. It is by no means invariably necessary to set in motion an ingenious mechanism for the sake of securing interest; indeed, there are some who hold that all incentives except direct interest in the object of study are selfish and therefore immoral. This view, however, leaves out of account the fact that a direct interest may be the outcome of an interest that is indirect. Again, the principle of suitability of time requires that the subjects shall be so arranged on the time-table that those which demand a maximum of energy shall come at hours when energy is naturally at its height. The phenomenon of 'warming-up' explains the fact that the second period in the morning is better for work than the first. If a class is to devote four hours a week to arithmetic, these may be suitably provided in the second half-hour of each of four mornings and the first half-hour of each of four afternoons, the afternoon periods being given over to practice and the morning periods mainly to new work. Again, elementary science, or manual work, involving practical operations which many pupils like to complete by staying over the allotted time, may suitably be placed before a play interval so that this desire may be

moderately indulged. Physical training comes as the natural culmination of play, the muscles having been already loosened and warmed up. In dairying districts or other places where children may have to work before coming to school, it would be unwise to place physical training first among the day's occupations, and a subject like writing should be taken some little time after a play period if good co-ordination is to be achieved. A social hour may be well placed on Wednesday, a day on which a tendency to laxity is liable to appear. Again, suitability of time is a principle which should be applied to the relation of subject-matter to age. *Robinson Crusoe*, at one stage a delight, may become at another stage uncongenial reading. Certain lessons may be associated with appropriate celebrations, so that, for example, the programme may show Nurse Cavell as the object of a lesson to be given in the week which includes Empire Day. Occasionally the teacher should postpone a task for which he feels that the class is not ready. He prefers to wait for an eclipse before explaining eclipses, seeking to make his instruction seasonable.

Excite the Desire to Learn

One way of assisting the desire to learn is to make oneself an attractive teacher in dress, manner and methods. Another is avoidance of punishments. Praise and blame, judiciously and not too freely administered, are more effective means to good work than physical rewards and punishments. Do not hesitate to offer your own work as a standard to be bettered. In another place, the importance of motivation, or establishment of incentive, has been emphasized; at present it is sufficient to recall the fact that learning is most effective when brought into line with the instincts of childhood. There are few better evidences of a teacher's skill than his ability to stir the children to want their work. According to Locke, they should never be satiated with learning; of the two, it is better to let them become satiated with play. Practise many teaching devices; variety of rule prevents satiety of school. Text-books should be carefully selected and interesting.

Whenever a pupil of weak mentality answers a question correctly, the teacher does well to add 'Good boy' or 'I am pleased with you.' Praise should not be lavished freely on bright pupils, who must be preserved from self-satisfaction.

The desire to learn may be cultivated either sporadically or continuously. *Continuity* is of high value in teaching. A list may be kept of dictation results, and at the beginning of each lesson in dictation or spelling the teacher asks those who had no mistakes last time to put up their hands. Quarterly and half-yearly examinations, individual reports upon pupils, and the practice of sharing with pupils an aim spread over a number of weeks are means of maintaining reasonably continuous interest and effort.

Prepare Pupils' Minds

Before beginning a lesson, it is necessary to give the pupils an idea of what it is about. They are then in a position to understand the bearing of the earlier part of the lesson upon the latter. For example, it is a mistake for a teacher of botany to give materials to each member of the class for examination under the microscope without explaining what the pupil is to look for. Too frequently the pupil wastes his time until the teacher reaches him.

While the Herbartian type of preparation, which involves the recall of allied ideas to the mental foreground, should by no means be despised, it is of subordinate importance to the provision of incentive. Even this may not become a distinct step of procedure in any given lesson; but it should always be thought out in advance, so that if the teacher has decided to rely upon his own personality to provide sufficient incentive, he should know what he is doing, and make his personality effective for the purpose in hand.

From the kindergarten may be taken an illustration of the preparation of pupils' minds. The children were to make paper beads. The teacher brought in a box some beads which she herself had made. Producing this box, she told the children that she had a surprise for them. At once all

became interested and excited. The teacher then showed the beads and demonstrated how they were made. Afterwards she allowed the children to choose the colours which they liked best for their own work.

In practical procedure two extremes are found: sometimes the pupils prepare and the teacher hears, at other times the teacher prepares and the pupils hear. In the former case, interest is expected to lie in the subject-matter; in the latter case, reliance is placed on the teacher's devices. A better principle may be found than either of these. Interest arises most readily neither from the subject-matter nor from the teacher's devices, but from the activities of the pupil. The whole question of interest and incentive is closely bound up with that of natural activities, and its solution cannot be better demonstrated than in a typical kindergarten. The teacher's problem is not so much to provide attractive gadgets, or even to select suitable subject-matter, as it is to relate the material of instruction to the instinctive activities of his pupils. Devices are often of great advantage, but to rely upon them unduly would be to subordinate the subject-matter to the interesting aids that have been provided, as some people subordinate their shopping requirements to the attraction of 'Friday specials'. Devices should be related to the subject as closely as possible, so that children may not remember them to the exclusion of more important matters.

The preparation of pupils' minds, if perfect, should include elements of knowing, feeling and striving. Cognitive preparation may be secured by the recall of allied ideas, emotional preparation by the creation of an atmosphere of feeling, and volitional preparation by the process of motivation. To recall and to clarify allied ideas may be a sufficient preparation for a lesson in geometry; to create a suitable atmosphere, sufficient for a narrative or a poem; to secure an efficient motive, sufficient for a manual occupation of any kind. Just as ghost stories are likely to fail of their object unless the atmosphere has been prepared, so may tales of any other type, or poems, or pictures, or songs. Impressions

should not be sudden, new knowledge overwhelming, new activities foreign to the interests of the pupils.

Establish a Thorough Grounding

Recently a student informed the writer that at high school his teacher of Latin in the first year had been incompetent, with the result that in later years neither he nor any of his classmates had found himself able to pick up the work that had been slurred. All had shown poor results at the leaving certificate examination. In how many cases has a similar complaint been laid, not without foundation? The Hon. Edward Lyttleton tells the following story of a chaotically-minded but otherwise fine young Eton boy: 'In talking to him the teacher used the word "dilemma". He had a very shrewd suspicion that the boy did not know the meaning of the word. He was right. Because he said to the boy, "You do not know what dilemma means." "Of course I know," he said. "What is it, then?" He paused for a moment, and said, "Dilemma is what you get when you sit on the horns of a bull."' (The *Landmark*, Vol. XII, No. 4, p. 224.) As the writer observes, 'No boy could have said that who had been taught to think clearly.'

In subjects like reading, spelling and arithmetic, a thorough grounding is essential. Much time is well spent on securing fluent and correct reading, the key to the house of knowledge, and on the fundamentals of arithmetic. In a private school two girls were placed with a certain class for theory of music. They had to struggle behind the rest, not grasping nor understanding the work which they did, and hating it more every day. Only after several years did one of these girls come to realize how little she had understood, and how wrong were the concepts she had formed. By this time very hard work and thorough revision had repaired the mischief that need never have been incurred.

Many parents keep their children needlessly from school, but they do them great injury. What is there more fatal to a thorough groundwork than the absences, the latenesses, the

lacunae by which the best of teaching is so easily vitiated? A change of school becomes calamitous if it should result in the wreck of the continuity of instruction which has been maintained over a long period; but the danger is minimized if care has been taken to teach nothing that will have to be unlearned.

The whole should be learned before the parts; for example, the geography of Europe before that of Italy, or the geography of South America before that of Brazil. The exceptions, such as the teaching of the known locality before that of the country, are more apparent than real, as the known district represents a more complete unit to a young child than the country as a whole.

Let Things and Ideas Precede Words

The defect in schooling which was so apparent to Montaigne and to Rousseau—'nothing but words, words, words'—has only been partly corrected in recent times. It is clear, however, that things and meanings should, wherever possible, precede names; that children should know salt before they learn to say 'chloride of sodium', and the city man's knowledge of sheep cannot equal that of the country man. In mathematics, pupils should have personal experience of yards, feet and acres before they work problems about these measures. An apple divided into suitable parts introduces pupils to fractions. Later, more abstract steps must be taken; but still the growth of ideas should precede that of words. A teacher with a new class used the term 'cancelling' in relation to the numerator and denominator of a fraction. Finding that the pupils looked blank, he set on the black-board the fraction $\frac{1}{2}$, and then gradually added a series of denominators without numerators, thus: $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{10}$. The class soon supplied the necessary numerators, in order to make the fractions each equal to one-half. They found that even $\frac{5}{10} = \frac{1}{2}$, and gradually mastered the idea of cancellation, which was now offered for their own convenience as a useful technical term.

The first teaching of number affords an excellent illustration of the use of things before words. Young children are taught to calculate with sticks, blocks, discs, beans and other objects before they attempt to work with abstract numbers. Similarly, in more advanced work, when the use of the screw-gauge is being demonstrated, it is better that the pupils should hold the gauge and 'work' it than that they should learn from verbal description or even from a lifeless diagram or drawing.

Advance Gradually

In teaching, one thing at a time is a good rule. Because his mind moves more quickly than that of his pupils, the teacher is prone to go too fast. His problem is to bring himself to the level of his class, not intellectually, but in what relates to method. It is necessary for him to harness the wild processes of thought and to guide them along a particular route to the desired end. He may have to tarry from time to time in order to build bridges over formidable gaps, many of which may have been unforeseen. Much of this labour is avoidable if the teacher, instead of leaping from his major premiss direct to his conclusion, is careful to insert the minor premiss as a helpful stepping-stone. By well-defined steps true understanding may be reached.

While engaged in treating the theorem that any two sides of a triangle are together greater than the third, a certain teacher discovered that the class did not recognize a triangle as isosceles unless it were justly and uprightly planted on a horizontal base. When lying on its side it did not appeal to the pupils as an isosceles triangle at all. Thus, because there had been too much haste over an earlier theorem relating to the equality of the angles at the base of an isosceles triangle, his well-planned lesson was ruined. It is impossible to graduate the steps in teaching too minutely, but very easy to proceed with too great abruptness. In English history the Civil War would be unintelligible to a class which had just been studying the glories of the reign of Elizabeth, if the teacher had failed to call attention to tendencies which had

been developing under the Stuarts, James I and Charles I; for no step can be safely omitted. Even the exercises in physical training should lead gradually one to another, continuity being essential to the attainment of the best results.

Proceed from Known to Unknown

One consequence of the principle of association is that the wise teacher builds his structure of knowledge upon ideas and interest already in the pupils' minds. This does not mean that the mind as a whole can be mechanically constructed, but only that within certain limits any series of definitely-related ideas may be made as familiar to a child as the multiplication table, given a skilful technician as teacher. The following instance may suffice to illustrate the value of proceeding from the known to the unknown: 'When I first started to learn the French language,' a student relates, 'I distinctly remember that the first lesson I had in that subject consisted in the teacher telling the class about France, his experiences in that country, and the French people. The following lessons were also informal, and dealt with the similarities in the French and English languages, instead of with their dissimilarities. In this way we were introduced to the strange language on ground common to both the English and the French. In other words, the teacher led the class over facts which were either known or partly known, and by the introduction of a little of the unknown the interest of the class was aroused.'

Teaching may be compared to a process of grafting, the new being added in a vital relation to the old. It should be distinguished from 'cramming', the process whereby unrelated facts are crammed into the child's head. 'Cramming' can result in no urge to gain further knowledge. If it is desired to teach that plants are composed of cells, it may be explained that cells are box-like structures. The children who already know boxes thus proceed to know cells. Similarly, they can comprehend that leaves are the 'kitchens' of plants.

A young class may find it difficult to understand that a locomotive engine must be driven by power, but they have no difficulty in grasping the meaning of the verse:

Choo-choo-choo is a big iron horse,
He works the whole day long;
Choo-choo-choo is a big iron horse,
He pulls the train along.

The word 'protoplasm' may have its terrors, but say that it is a jelly-like substance, and the difficulties disappear. Or compare a star to a diamond, and the child familiar with his mother's ring has begun a course in astronomy.

Proceed from the Easy to the Difficult

First steps should be within the grasp of the weakest intelligence in the class. Each lesson in arithmetic should begin with exercise that can be done mentally. Examples should gradually progress in difficulty, thus:

'If I give each child in the front seat two marbles, what is the average number of marbles I have given?'

'If I give one child three and two other children three each, how many have they on the average?'

'I give one child two, and another none. What is the average I have given?'

'I give one child four, and another six. How many is the average?'

'What is the average of 8 and 6?'

'What is the average of 0 and 4?'

'Of 0, 4 and 5?'

'Of 8, 6 and 7?'

'Of 12, 18 and 30?'

'There are 36 in our class, 42 in the class below ours, and 33 in the class above. What is the average number of pupils in these three classes?'

'What is about the average number of pupils in a class in our school? Shall we note down the numbers and work out the average properly?'

In teaching reading, great care should be taken that the gradation of the passages is not steep or difficult. The path from a chart bearing the legend 'The dog bit the cat' to the more ambitious tales narrated in the primer should be a gradual incline, not a precipice. It is a good plan to write on the blackboard sentences such as 'Close the door'—the first to interpret the sentence performs the deed. Instruction is a gradual process of building up. Algebra should be introduced by such devices as to substitute for the arithmetical formula, $\text{area} = \text{length} \times \text{breadth}$, the symbolic abstraction, $a = l \times b$. In all forms of mathematics, the neglect to illuminate some minute step may involve the pupil in incredible difficulties.

Primary subjects like arithmetic and nature-study must pave the way for advanced subjects like algebra and biology. Sound definitions must precede geometrical theorems; fractions the binomial theorem; identification of 'naming' words the parsing of the noun, and so on. Lively methods make work seem easy; for example, pupils may play '*Je pense à quelque chose*' in French.

Teach Main Operations Before Exceptions

Long explanations cause confusion, and when a rule or a principle has to be taught the exceptions may be laid aside until later. In spelling, at first teach thoroughly that the letter 'i' precedes the letter 'e'; only after this rule has been thoroughly mastered teach that the reverse holds good after the consonant 'c'; and still later teach the anomalous spelling of the word 'seize'. In most cases, the rule is first to be taught as if no exceptions existed or were contemplated. The spelling of 'seize' may be driven home partly by contrasting it with that of 'siege', and partly by associating it with the old English form 'seisen' and the old French 'seisir'. But there would be no point in doing this unless the general rule governing the order of 'i' and 'e' had been thoroughly taught, for universals must take precedence of particulars.

CHAPTER XII

INTEREST

PLAY may be a competitor with work or a relaxation from it, or an aid to it. Even when it competes with study, play is not to be despised, as the boy who thinks too much of cricket and football may possibly develop his powers in that way as much as he could have done by closer addiction to lessons. Sport, however, should not become the pupil's main interest. As relaxation, play remains necessary to childhood and desirable to all the ages of man. In play, mental processes are concerned with the activity of the moment, and in the absence of reference to external ends these processes develop freely and with a happy lack of friction or strain. But play is on the whole an aid to work. It is without doubt nature's way of preparing the young for the types of activity which they will be called upon in later years to perform. This holds good both mentally and physically. The child who plays school or shop or marbles or noughts-and-crosses is preparing himself to live and think in a social medium as truly as his fellow who prefers to play chasings, leap-frog and prisoners' base. Many forms of play may be adapted to school use. The ancient Egyptians made a game of arithmetic, and the Greeks invented spelling dances.

A variety of useful and necessary lessons may be learned under modern school conditions by 'play' methods. Boy scouts and girl guides are engaged in the pleasurable pursuit of learning. Even in science, pupils may devise their own experiments in the play spirit, which should pervade the majority of school activities. So little is play removed from work that dramatic performances are described indifferently as 'works' or as 'plays'. Children who have dramatized the reprieve of the burghers of Calais, using materials, clothes and implements prepared by themselves, and taking the

dialogue from their history 'reader', gain a vivid conception of the times in a fashion that does not appeal to them as work. In a game, the external end of victory becomes more pronounced than it is in the free or childish play which finds all its satisfaction directly in the activity itself. A member of a college crew goes to the river for his 'work'. What the schools and the professions want is the *play spirit*, the spirit, that is, which expresses itself in the form of direct and keen interest in the operation in hand, whether it be a cricket match or a scientific, literary or historical investigation.

In a geography lesson seen recently, one child was chosen to represent the east, and stood facing that way, pointing to the east. Another represented the west, with her back towards the east and pointing westwards. North and south were similarly treated. 'North' extended both her hands to emphasize that the needle of the compass pointed that way. Other children formed similar compasses, the pupils being highly interested and desirous of learning more. In another lesson, a sand-tray model of the locality was made, labels being affixed to the most interesting features of the district.

Reinforce the Will to Learn

In lectures delivered at Columbia University in 1908, the writer adopted the term 'motivation' as a technical term to replace the Herbartian step of 'preparation'. This change of terminology was devised in order to indicate that the first object of the teacher is not necessarily to prepare the pupils' minds by recalling their relevant ideas, but rather to establish a direct relation between the coming lesson and the instinctive interests and activities of the pupils. Motivation implies not the invention, but the selection and application of motives for the work to be done. It is seldom that motivation can be established directly, as it were, by a frontal attack, since harangues upon school duty are apt to defeat their own object. The introduction of a system of rivalry represents a type of motivation which is direct but obvious. The snare is set in the sight of the bird, which sometimes refuses to

be taken. Direct motivation is preferable where it can be applied. An example of successful direct motivation is supplied by the way in which a teacher's profound appreciation of a picture or of a piece of music may bring about a similar appreciation on the part of a whole class. Frequently, however, motivation involves a more subtle art, indirect in its operation. Pupils in one school who exchange letters with pupils in another are scarcely conscious that behind their free exchange of ideas and experiences lies the teacher's zeal for bigger and better English composition.

The will to learn may be buttressed by social and institutional relationships. Persuade the boy's father to take an interest in his son's written exercises, and the pupil's work reflects this interest immediately. Mnemonics are sometimes applied in order to assist the learning process; and to such mnemonics as 'Go down and enter by force', and 'Fat boys eat apple dumplings grandly', familiar to students of elementary music, some value is undoubtedly attached, although the empty phrase may persist after its significance has been forgotten. Certainly, the will to learn is strengthened when work has been so carefully graded that the pupil can see the steps for himself and can realize that none is likely to prove too steep for his stride. Rewards and punishments have been used from time immemorial to reinforce the learning process; but prizes may injure the learning spirit, spoiling scholars as badge-hunting has been known to spoil boy scouts. Punishment for failure to learn is immoral. Few things are more helpful to good work than a thorough appreciation of the problem to be mastered; to secure this is generally to provide an adequate incentive. The inculcation of fresh interests may be helpful, as when pupils in geography are encouraged to collect postage stamps. Do not disappoint an eager pupil too much; it is unfair to discourage him because you may have become tired of hearing him answer so many of your questions. Exhibitions of art and needlework, in which every pupil's output finds a place, may provide a potent and sustained stimulus to effort.

Make Learning Attractive

Uniformity of method has its advantages, but lessons should not be given on the familiar boarding-house plan, always the same menu on the same day of the week. Both procedure and apparatus should be varied; and the principle of variety may be introduced to advantage in other directions. A woman teacher, who had been in the habit of wearing dark clothes to school, found a much better response from her class of girls when she began to wear bright and colourful dresses. Metaphorically, as well as literally, the teacher should put on an armour of brightness. Yet mere enthrallment is not enough, as it would need to be provided in larger and larger doses, ultimately defeating its own end. With young children, learning should be a part of play. Erasmus relates how a gentleman, desirous of initiating his son into Greek, had archery targets made in the forms of the letters of the Greek alphabet. A hit meant a cherry for the marksman. In a short time the boy knew each letter and its Greek name, without having been conscious that he was learning anything. Erasmus also suggested 'picture talks' in Latin and Greek. The teacher shows a picture representing a combat between an elephant and a dragon, Latin and Greek names being introduced into the description.

Since learning involves more rather than less work on the part of the learner, who pours his energy freely into the channels of his desires, there seems to be little point in the possible objection that attractiveness involves 'soft pedagogy'. Surely life may be trusted to provide enough difficulties to furnish scope for self-denial and opportunities for exercise in doing disagreeable things. The old argument that if the process of learning be disagreeable, so much the better, will not stand under the fire of criticism; for the habit of liking one's work is of greater social and individual benefit than that of misliking or taking it as a nasty medicine, an uncongenial necessity.

At one time it was considered enough if school pupils 'behaved themselves'. This idea has given place to a much

more active conception of the children's part in education. They find learning attractive when they contribute something towards the lesson, not when they are expected to be passive. The sense of freedom produces an improved response. Play, games, lecturettes, talks by the children, spelling 'bees', group competitions and other devices help to increase both the activity of the pupils and the efficiency of the work. Excursions, aids, illustrations, short and interesting anecdotes, even cross-word puzzles, are sometimes employed by skilful teachers as means of promoting interest.

Too often school life ceases to be attractive when the pupil leaves the infant for the primary school. An ex-pupil writes:—

'Under modern methods the first days of school life are crammed with happiness for the little pupil. When kindergarten days are ended and the child moves into the higher classes it is then that the hum-drum of school life begins. I remember my own case. In the kindergarten the children sat on pretty little chairs, and everything was very pleasant. But the first classroom was an ordinary schoolroom with ordinary desks. From what I can remember there was nothing at all in it to attract me. To make matters worse the teacher was not nearly as sympathetic or as smart in appearance as my former teacher. The result was that I hated school, and almost had to be forced to go. Fortunately I was not long in that district. I do not know if I should have liked the life any better had I remained there longer.'

Cultivate Activity, Brightness and Variety

Pass in review the teachers at whose feet you have been privileged to listen, and you will seldom be disappointed in those who showed variety, brightness and energy. From them, you are convinced, you learned something. These are the teachers that you would wish to meet again in order to thank them for the inspiration that they added to your earlier years. In later days, no doubt, you realized that the most attractive teacher has not necessarily the finest mind, and

that the one or two great minds with which you may have come into contact at College or University have meant even more to your own mental development than your contact with the old school favourites. However that may be, the teacher cannot afford to retire snail-like within his shell. He must put out his best efforts, displaying unsparing alertness and varying his methods, devices and apparatus. Although one teacher, timid, uncertain and vacillating, may have produced a like response on the part of his class, yet within a few minutes another with bright, energetic manner, can effect a marvellous transformation in the attitude of the pupils. Rarely can a lethargic teacher provoke activity in his class except at his own expense; yet activity of the right kind is essential to good work. How difficult for a child to write, to sing, or to do physical 'jerks' without being energized by appropriate stimuli! Not that the teacher should wear himself out in ceaseless striving; there are, on the contrary, many times when he can afford to be quiescent, but at intervals the manifestation of energy is indispensable.

• 'While watching demonstration lessons,' an observer comments, 'I have noticed one teacher in particular whose movements are always swift, alert, and full of purpose. Her attitude throughout every lesson is one of intense concentration. Her eyes seem to be everywhere; nothing escapes her vision and attention. Her speech is clear and ringing, expressive of her personality. The class, because of its association with this teacher, has undoubtedly acquired some of her active spirit, for the children reflect in everything they do a great part of her energy. A teacher with a personality of this type must inevitably be more successful, other things being equal, than a teacher whose movements are slow and whose individuality is dull.'

Since children are highly sensitive to environment, it behoves a teacher to make the schoolroom bright and attractive. The daintiness and 'liveableness' of a well-kept room makes an indelible impression upon the pupils' minds. Flowers, friezes, pictures and other ornaments invite desirable mental reactions.

Never Punish for Failure to Learn

The following is an example of bad technique:—'When I was a small child we had to memorize long passages of poetry. If we could not say them by a certain date we were deprived of our "sports" afternoon and were given another piece to learn as well. This method made one detest poetry, and only in recent years have I got over the feeling.' In another case, a boy, punished for faulty work, gave the teacher a great deal of trouble, the instinct of antagonism having been aroused more effectively than that of fear. If a teacher's art is inadequate to induce a pupil to learn, either the pupil is incorrigible, or the teacher should resign.

Many children, being 'hard wits', slow of understanding, need special consideration rather than punishment. With a slow pupil, persevere until a word is spelt correctly, or a task achieved. Many children have been punished merely because their ideas happen to be vague and confused. Wilful inattention or laziness is another matter, in which some moral quality is involved; but these defects are seldom prominent except under conditions of ineffective teaching.

Learn from the Pupils

Someone has remarked that 'A teacher must be willing to learn from his class, be sensitive, observant, ready to take hints from his experience, patient and tolerant of youthful perverseness'. 'Watch the child,' wrote Froebel, 'the child himself will teach you.' 'Let us learn from the children,' he used to say. In so learning, the qualities of self-criticism and humour will be helpful. If only the right spirit be present, an occasional joke and a burst of laughter tend to renew the flagging eagerness for class work. It is desirable, moreover, that older pupils should realize the aim of a lesson. Frequently they should be encouraged to set their own aims. Interests which are found to be foreign to the pupils' minds may be grafted on to their native interests. This advice, no doubt, is more easily followed by the teacher of an individual than by the teacher of a large class, or of a class dominated

by the idea of examinations. But whether the class be large or small, the examination remote or imminent, the teacher will find that effort may be economized and waste minimized as the outcome of a careful study of the nature of his pupils.

It is from the pupil that the teacher learns both what to teach in the light of the extent and limitations of his knowledge, and how to teach in the light of his instinctive and temperamental nature. The following practical spelling-plan illustrates the process of learning from the pupil what to teach. A selected list of new words is dictated. From the work of the pupils the teacher finds that some of the words do not need to be taught, since every child can spell them. Drill follows on the words in which mistakes have occurred. A further test is given, the results of which indicate what words have not yet been assimilated, and what children stand in need of individual attention. But above all the teacher learns from his pupils *how* to teach them. He watches the class, observing under what conditions the class as a whole, and individual pupils, give forth their best effort, maintain their interest, and respect the canons of good discipline. In an infant school a very small child is sometimes found competent to march the children in, and even to conduct the morning assembly, with the procedure of which he has become familiar.

No Impression Without Expression

In the lower classes special periods should be devoted wholly to conversation and intercourse. Moreover, no book should be read in school unless an assignment is founded upon it. Pupils should express their impressions with the variations proper to their individuality; they will soon look forward to the privilege of formulating their opinions upon the characters or incidents of a story, or their ideas, however crude, upon history or geography. Nor is there any reason why, as pupils advance in the school, they should adopt a more passive attitude, although teachers conscious of their intellectual superiority, tend to prefer to make *ex cathedra*

statements rather than to tolerate or encourage discussion. Practice in expression increases the vocabulary of the pupil, his power of observation, his self-confidence and the availability of his knowledge; nor is any 'expression' lesson wasted if the children can render a reasonable version of what they have been told.

Pupils being not by nature passive, should not be treated as such. The school is a place for activity—not essentially recreative, but disciplined activity. The method of Squeers, that a boy should spell window (wrongly), then go and clean one, is but a burlesque of a really sound mode of procedure. Read a scene from Shakespeare, then act it; plan a relief map of the locality, then make one on the sand-tray. The aim in these instances is that the pupils should express in some appropriate way whatever they have learned.

CHAPTER XIII

THOROUGHNESS

Insist on Regularity and Punctuality

A DEVICE may be mentioned by which one teacher secured punctuality. Behind the door of the class-room were hung a book and pencil. If a child arrived late, he was required to write in a book the following information: Day and date of the offence, number of minutes late, and explanation of his shortcoming. To this record the pupil signed his name. Should any child default repeatedly, a note was sent to his parents, absolute proof being furnished from the book signed by the child himself.

If the teacher does not come early to lessons, his prestige suffers, and his example becomes injurious instead of helpful. His preparation should be made before the pupils come into school. Thus through his own punctuality he will gain a better grip of the class.

To secure the punctuality of children, it is wise to make the first lesson of each day the most attractive. Active work in observation may be scheduled for the garden or with the shadow-stick before the regular lessons begin. In order to participate in such work many pupils are fain to come before the appointed time.

Both in the morning and after luncheon, a first bell may be rung as a reminder of the need to be ready. Unreasonable hurry is to be avoided; no teacher should expect children to eat their luncheon and wash their hands within a few minutes. Teachers on playground duty, waiting perhaps in readiness to initiate organized games, should allow reasonable time for these activities.

Treat Subjects Shortly, Practically, Clearly

Two lessons were given on Christopher Columbus. In the first, the teacher dwelt on the life of the famous navigator, and included all of his four voyages. At the end the children

were obviously befogged. In the second lesson, the contemporary consciousness of the need of a western route to India was clearly explained. A blackboard map was drawn, and only the first voyage of Columbus treated. Towards the end, the teacher tested the class, the members of which appeared to have gained much valuable information. In this place it may be added that all blackboard work should be set out with the utmost care for simplicity, correct sequence and economy.

Feed the Child's Mind

As Quintilian observed, the teacher must let himself down to the level of the pupil; but for all that, he should be well equipped with materials upon which the child's mind may be fed and nourished. Since it is obvious that the teacher must have a vastly greater range of information than the pupil, it is surprising how often the teacher's own knowledge appears to be at fault. In order to satisfy the inquiring mind of a child of twelve, nothing short of genuine scholarship can be regarded as adequate. In each lesson there is need of fresh material, new facts and novel points of view. Not that the teacher needs to excel his pupils in everything; he may write worse than one, may know less about wireless telegraphy than another; neither can he be expected, as Juvenal suggests, to tell at a moment's notice how many years Acestes lived, or the name of Anchises' nurse. But many teachers either do not know enough, or teach too little; the only prophylactic is continuous study and wide reading throughout life. It is particularly necessary that bright pupils shall not lack mental nourishment, although the term nourishment should be taken to include problems as well as facts. Children will apply much thought to problems by which they are really puzzled or intrigued.

For fear lest a mechanical interpretation may be applied to the doctrine of filling the child's mind, it should be mentioned in this connection that the receptive powers of pupils ought not to be strained. The mind is to grow, rather than be bloated. The logical sequence of facts may be postponed

to the psychological, by which is implied that sequence which befits the mental development of the young. Information may be relieved by vivid presentation, and illustrated by significant and pointed anecdote. Immature minds must not be forced to think; they need no more than an occasional question to set them deliberating, since the time for learning is not necessarily the time for judgment and inference. The good teacher appeals freely to the imagination, the exercise of which is seldom burdensome. Long lists of names and dates are to be avoided; but every relation between facts should be made clear to the pupil himself. Making his first concern the mental process, the wise teacher avoids both haste and monotony, and sets no store on generalizations that have not been understood.

Especially in poor localities is it necessary to nourish the minds of children. A boy reared in a slum area not infrequently acquires through his teacher a taste for reading that is capable of lifting him far above the environment to which he was born.

Utilize Resemblances, Contrasts, Associations

As has been indicated earlier, association is an original and natural method of learning. 'Does not this remind you of that?' we ask, and, in asking, forge a link in the chain of memory. The teacher points out the close resemblances between the west coast of the South Island of New Zealand and the west coast of Norway. He also utilizes contrasts, which, like similarities, facilitate the learning process. He points out that the journey from England to Australia, which at one time occupied as much as six months, has been completed by aviators in a few days. He illustrates the excessive rainfall of some equatorial district by measuring the actual rainfall of the school locality during a wet week, and then comparing figures. He introduces charts and pictures, and is not sparing of anecdotes. At every point he remembers that similar ideas assist one another; and so do contrasting ideas. The idea 'white' tends to be suggested

either by 'gray', a similar, or 'black', a contrast; and on the principles of similarity and contrast the teacher grounds many of his illustrations.

Have Many Examples for Each Formula

Whether the method adopted be deductive or inductive, an abundance of examples should be supplied. For instance, a large number of fractions should be examined before the pupils are encouraged to discover that where the numerator and the denominator are multiplied by the same number, the value of the fraction remains unaltered. After a generalization has been formulated, it should be applied repeatedly to fresh instances.

Teach One Thing at a Time

Efficiency must not be sacrificed to haste. If a piece of work demands treatment of two kinds, it is better to allot two lesson-periods to it. For example, whenever a new passage has to be treated as a reading lesson, opportunity must be provided for both impression and expression. Seldom can both be provided in one period of thirty minutes. In such a case two lessons should be given, one mainly for understanding the passage, the other mainly for free interpretation and discussion. It is a safe rule to maintain that if a subject has two definite aspects, each aspect should be taught separately. In teaching decimals, for example, keep for some time to decimals; the rest of arithmetic may wait until the pupils have come to understand them thoroughly. To refer to a more elementary stage in arithmetical progress, far better to have a complete knowledge of the eight-times table than to know a little about the tables from eight to twelve times.

Avoid Haste; Be Content With a Little

In giving instruction, the natural tendency of the teacher is to cover too much ground in the time that is available. His own skilled mind negotiates without difficulty the hurdles that obstruct the intellects of his pupils. Revision reveals the

fallacy of haste. The instructive type of lesson becomes a real danger, unless the teacher is prepared to provide pauses, at intervals never longer than eight minutes, for the pupils to associate, apply and illustrate what he has told them. The aim should be, a little well done. Haste entails the neglect of difficulties. In practice, the teacher will find it a great advantage if at the beginning of the lesson he relates the work in hand to that which was done in a preceding lesson; and at the end to that which is to come afterwards, if only because he must learn to lose time in order to gain it. At all costs let him refrain from eternally bathing the pupils' ears in the thund'rous wash of tedious instruction. Just as a horse that has been made to work before it has developed its strength tends to become weak and under-sized, so the young mind is liable to be stunted and disordered by the infliction of a load of knowledge which it finds itself unable to accommodate. In mathematics, for example, a whole class progressed well under one teacher, because she allowed as much time as the pupils wanted to comprehend a difficulty, but fell back under the next, who was prone to rush headlong upon every obstacle. Not infrequently it happens that a child coming into high school from primary school, where time has been allowed for his thoughts to ripen, falls a little behind; it is an unwise procedure to hurry him forward to new work before consolidating the old.

Frequent and thorough revision is necessary to compensate for operations which have been missed. A high school pupil, having been absent on a holiday while the class was taking the accusative and infinitive, as a result may be hampered in his Latin for years. Similarly, how many children in the primary school boggle at some point in arithmetic which has never been made clear! Moreover, a rule which appears to have been grasped by the pupils on one day may be forgotten or misunderstood on the next. Usually this disappointing result will be due to the overloading of a lesson, or to the failure of the teacher to deal separately with the salient points of the subject.

Test, Revise and Repeat Frequently

A lesson in history is given, and the teacher proceeds to question his class closely upon it. Several of the answers are wrong; but one may see from the surprise on the faces of the pupils who have given the wrong answers that they had thought them to be absolutely correct. Had not the test been applied, and the corrections made, these pupils would have gone on believing their fallacious ideas to be accurate. Moreover, to impress important facts, the teacher recurs to them again and again. An abstract of fundamentals is made on the blackboard, taken down by the pupils, and revised at home in readiness for examination at the next lesson. Whenever pupils read a book for purposes of study, it should be an invariable rule that they shall make an abstract of it, chapter by chapter, as they go along. The abstract should be very short, so that it can be logically, though not verbally, memorized by means of frequent reviews. It is most important in this connection that the abstract should be the pupil's own; his own analysis means far more to him than anyone else's, and makes a far better focus of association, reminding him of an extended series of details and illustrations.

Into the revision of lessons an element of friendly competition may be allowed to enter. Words and phrases, as well as methods, may be varied greatly, provided that the idea and meaning have been thoroughly driven home.

Avoid Bookishness, Pedantry and Affectation

Montaigne and Rousseau used to inveigh bitterly against pedantry, the mere affectation of a bookish learning. The teacher's learning, and especially his desire for it, must be sincere. To this end, everything in the course of study should be made as real as possible. Two boys were giving lecturettes. One chose as his subject 'The Life of Shakespeare'. The attempt was creditable, but the class showed itself less interested in this than in the companion lecturette on 'Aeroplanes', delivered by a boy who had lived at a

neighbouring aerodrome and knew from personal experience the 'ins and outs' of the machines.

There is one high school teacher who adopts a peculiarly lazy and uninteresting method. She tells the class to take out their text-books, and seats herself before them with her own copy open. For forty-five minutes she reads aloud from her book, glancing up periodically to see that every girl is following in her own text. The only change comes when she varies the words slightly in order to present the material to the class. Such bookishness is not teaching.

Too much should not be attempted in a single lesson; and, above all, too much should not be assigned to pupils at one time. The child mind is only too easily dispirited when faced by an interminable academic task.

Keep Method Uniform Where Habit is Required

Skill, being of the nature of an efficient habit of doing anything, is greatly favoured by uniformity of procedure. In writing, skill is not promoted by holding the pen, now in this way, now in that. In arithmetic, subtraction should not be performed sometimes by one method and sometimes by another; but care must be taken to proceed according to an invariable form, so that a path of preferred conductivity between the stimulus and the response may become automatic or standardized. Deviations from this path are likely to involve both waste and inaccuracy.

One teacher adopts an invariable method in drill-work, allowing two minutes for purely mental drill in such operations as 234×7 , including the seven-times table, two minutes for the working of one example by the teacher on the black-board, and two minutes for the working of the next example by the class. These operations are definitely timed. The last example must be corrected; then those right proceed to the remaining examples, about twelve minutes being allowed for this work and for final correction. Adherence to a regular method tends to make the children's work systematic.

Vary Methods Where Intelligence is Required

On the other hand, except in the case of mechanical skill such as is necessary in the four fundamental operations of arithmetic, in combined physical exercises or other forms of teamwork, in writing, or drawing straight and curved lines, etc., it is undesirable that pupils should become the automatic slaves of their habits. Attentive intelligence should remain the ultimate master of habits, so that they may come frequently under review, and be adjusted as need arises. Intelligence demolishes habits such as counting on one's fingers, and lays the foundations of new ones. In dealing with isosceles triangles, show the triangles in various positions, lying on their side or inverted on their apex, for fear 'Lest one good custom should corrupt the world'. Similarly, one should often revise a history or geography lesson, or a story, from a new point of view, remembering that the object is not to turn children into automata.

Preserve Balance and Manysidedness

When the teacher has to choose between the encouragement of a special ability and the stimulation of neglected interests at the expense of that special ability, he is bound to use his own judgment with respect to the particular case. In the elementary school, although his interests may be literary, a child must be taught some arithmetic; but it is never necessary to disregard his taste entirely. In general, the valuable qualities of balance and manysidedness of interest are not incompatible with the development of specific talent.

Encourage Perseverance; Rebuke Shirking

Few things are harder for a young teacher to realize than the need of thoroughness, perseverance, and determination to have work properly done and mastered. The experience of one girl taught, if the word may be so misused, by a superficial teacher, may be instructive:—'I well remember that long division was a mystery that I could not fathom. Regularly on Tuesdays we had tests in arithmetic, an example in

long division being always included. Once the teacher, knowing my helplessness, showed me how to perform the process; but at the time I did not master the method, and perhaps never would have done so, had not my brother taught me, for the teacher did not bother about me any more. If she had shown me but once more, I am sure that I could have persevered until I had learned the method thoroughly.'

Cultivate Permanent Tastes

The test of a teacher's success in inculcating permanent good taste is the tone of his class. If he chance to undergo some mishap, one class will be sympathetic, where another will burst into raucous laughter. It is not impossible to produce in a class a tone of revulsion against uncleanness or dishonesty; or of irritation at low standards in poetry, fiction, music or usage of the Sabbath day. Positive exercises in taste are generally preferable to negative. Children may emulate noble acts, and learn to appreciate good music and books. Two conditions are essential to the production of good taste in school pupils. One is that the teacher himself shall possess and manifest it, the other that the atmosphere of school life shall be favourable to its development. There are still schools where the harsh voices and resounding blows of head teachers prevail to the detriment of such taste as the children naturally would have possessed; and in such an environment the best that can be done by a class teacher is to palliate these base and unworthy influences. There is, moreover, such a thing as intellectual, as well as æsthetic and moral taste; for example, some pupils may develop a permanent liking for establishing relations of cause and effect in the subject of history. While the development of taste is generally unconscious in the individual, it is evident enough to the teacher or to any other detached observer. Tastes should be in keeping with social standards; relaxation need not involve dissipation. Good taste is mainly contagious, but partly the result of conscious aims.

One 'old girl' gives the following description of her experience at school in connection with the teacher's effort to interest the children in reading:—

Three times a year catalogues of suitably graded books were passed around all classes, and each child selected a book costing a penny or perhaps a shilling, according to the amount of pocket-money he or she might possess. When the consignments of books arrived, each child was given the one which he had ordered, and the books were taken home to read. Subsequently the children brought their books to school and exchanged them. This process continued until each child had read the whole consignment of books suitable for his own particular grade.

I shall always remember my first purchase, which was made when I was not quite five years of age, during my first week at school. The book was entitled *Hop o' my Thumb*, and I thought that father never would come home that night, so long did the time seem to be, and so impatient was I to hear my story.

A great advantage of this scheme is that the children are encouraged to build up a library of their own; and each purchase made through the school means one more volume added to their collection. Children very soon develop a 'collecting mania' when once they have made a beginning, and need little encouragement to continue.

When eventually a library was formed at that particular school, there was no need to introduce the children to the book-shelves. The chief difficulty lay in keeping them away.

Illustrate Freely

The art of illustration aims at making one's meaning clear. As this is a vital function of the teacher, it is necessary that he should make a study of the main types of illustration, and equip himself with a variety of illustrations suited to practical use.

A primary distinction between types of illustration is that some are verbal, while others are tangible and concrete. Stories and vivid descriptions will be found particularly useful as verbal illustrations; while samples of the objects themselves, models, pictures and diagrams are the main varieties of concrete illustrations. In a lesson on the earth, the children might look through the windows at the earth itself, or might study a globe, or a series of pictures of superficial features, or they might be shown a diagrammatic representa-

tion of the earth in relation to the sun and the moon. If, however, only verbal illustrations were to be employed, it would still be possible for the teacher to interest young children in the earth as a planet by telling them Jules Verne's story of a journey from the earth to the moon. Or, instead of such a story, the teacher might vividly describe the earth's shape and movements, using an imaginary orange as an illustration.

In such a lesson as the one indicated, there can be little doubt of the superiority of the concrete to the merely verbal illustrations. The latter would involve an extensive use of abstract terms and a continual appeal to abstract ideas which would be likely to impose a strain even on the faculties of well-educated adults. The subject, being new to the pupils, would require a foundation in sense-perception which could only be provided in this instance by models and diagrams. The earth itself as an object is too large to be apprehended as a whole, or to be adequately represented by pictures of parts of its surface.

In a lesson on the reign of King Alfred the Great, the teacher might employ verbal illustrations (a) in the form of the story of the burnt cakes, or (b) in the form of a vivid description of the appearance of Alfred and his court. On the other hand, he might introduce an object itself, if procurable, in the form of a coin of King Alfred's time; or a model in the form of a bust of the king; or a picture of the strong, keen-eyed, long-haired and bearded monarch; or finally a diagram in the form of a map showing the disposition of the Danish and English forces. Which of these illustrations would prove the most effective? The answer can only be offered in terms of the age and interests of the children; the younger might benefit more from the story, the elder from the antique coin.

In such work as dressmaking, both verbal and concrete illustrations may be employed. Occasionally the teacher may introduce such stories as those of the adventures of Snowdrop, or the web of Penelope, or practical anecdotes

from the home. At least the teacher will from time to time describe garments that are being displayed in neighbouring shop windows. Concrete illustrations are essential to the work in hand. If a cloth is to be worked, a similar cloth should be used as a standard of reference, an actual object being thus employed as an illustration. Frequently dolls dressed in miniature clothes of the type to be made by the pupils may be utilized as models. Further encouragement is given by the display of pictures from fashion-books. But in this connection the diagram is the most indispensable illustration of all, including, as it does, all the essential features of construction, and omitting all the non-essentials, such as material and colour.

CHAPTER XIV

CLASS GOVERNMENT AND DISCIPLINE

What Discipline Means

IT is sometimes difficult to explain what is meant by class discipline, whether formal training, or restriction imposed from without, or self-control.

(a) Formal training is the name applied to a certain educational doctrine, which may be illustrated from Jerome's advice on the education of Paula, that she should learn the names of the patriarchs from Adam downwards in order to strengthen her memory. The theory of formal training implies that general mental powers may be developed by special and particular exercises; for example, the memory by learning patriarchs, or executive ability by studying Latin grammar. Discipline as formal training is now somewhat discredited; people smile whenever it is said that the Battle of Waterloo was won on the playing fields of Eton, or that in learning to plane a piece of wood straight the pupil is also learning to lead a straight life. Yet the reaction against formal discipline may itself go too far, since the effects of training are likely to be transferred to new situations in so far as common elements, common methods, or common ideals continue to hold good. To make a child neat with books may not make him neat with clothes, but it will do so in so far as books and clothes resemble each other, and in so far as neatness may have been elevated to the dignity of a universal ideal.

(b) More often than not the term discipline is used to imply not what the psychologist describes as formal training, but a measure of restriction imposed from without. The word 'discipline' signifies training, but frequently the training is regarded as a process directed by some external authority. Addison can speak of 'the discipline of the strap'. Now, the proudest boast of many teachers is that they are

good disciplinarians. This means that they can keep children quiet and subdued; not that they can teach them or even allow them to teach themselves. To boast of being 'a good disciplinarian' may be the last refuge of incompetence. The mere disciplinarian prepares children to be taught without knowing what or how to teach them. At one time a certain music-master of foreign birth used to lecture to students; the writer was expected to be present to maintain order. The writer was as incompetent to give the lectures as the music-master to preserve discipline; but by the combined instrumentality of both the students managed to learn. Yet clearly it would have been better economy to have united in one personality the powers of control and teaching.

(c) *Discipline of Self-Control*.—Self-control is the only kind of discipline that has moral value, and that rests on principle rather than on expediency. It may be secured by taking the class into a kind of partnership with oneself, avoiding to the utmost of one's ability the infliction of punishments and encouraging pupils to be proud of the tone of their class and devoted to educational aims and projects of their own adoption. The teacher who 'brings out the better side' of his pupils is procuring order through self-control. It remains in the writer's memory from primary school days how one of his teachers made a bargain with the class to give up corporal punishment as long as the conduct of the class showed it to be unnecessary. As a pupil, the writer regarded the plan as an excellent one, and when the teacher finally decided that the terms of the contract had not been kept, it was felt that he had abandoned a benevolent design too hastily. In a class of moderate size, a skilful teacher can so develop self-control that formal punishment ceases to be required. Who ever found that he had to punish a child during the course of a spelling 'bee', or while the class was engaged in preparing a dramatic version of a story, or in the course of an organized game? For during the intelligent pursuit of aims which have been made their own, children have little difficulty in exercising self-control.

Prestige

Although disciplinary power is in part a gift of nature, there are few teachers who may not benefit by a study of the means by which it can be fostered and developed. In discipline, the main factor is the prestige of the teacher. Prestige is not altogether a matter of worth, although, other things being equal, a worthy teacher carries more weight than one who is less worthy. But the average teacher is looked upon by children as an inexhaustible fountain of knowledge. The situation is all in his favour; the ground of battle, or, rather of instruction, is his own choice; the limits of the knowledge of his pupils are inevitably narrow. Although his own father may be a scholar famous for scientific learning, should the teacher's instruction be challenged by the learned parent, the pupil will unhesitatingly accept the teacher as the greater authority.

Prestige is essentially a complex phenomenon, to which many traits of the teacher, and several factors outside his personality, are bound to contribute in varying degree. Among personal factors may be mentioned the teacher's dress, bearing, manner, voice and tone. An erect carriage, a decided air, a distinct and rather low-pitched voice, a varied intonation with a falling inflection at the end of a command, these are qualities which go a long way towards the maintenance of order and attention. Those not happy enough to possess them by nature need not transfer their allegiance to another profession; by diligent practice they may be acquired. If, as history relates, a stammerer once became a Demosthenes, what shall prevent a shy, clumsy, raucous bumpkin from transforming himself into an artistic pedagogue?

Qualities Which Convey Prestige

Other qualities making for good discipline include power of initiative or leadership, a self-confidence that is either real or apparent, an ample supply of energy, promptness and decision in emergency, kindliness, firmness and thoroughness.

in dealing with individual pupils, tact and self-control. Great notice is taken by the pupils of the teacher's personal habits, which should never be off-hand or careless, but most particular. In such matters as dress or carriage it is wiser to profit by criticism than to resent it.

Who are they that become leaders at school and in life? *Imprimis*, they are those that believe in themselves. The one who takes the lead is not he who is content to criticize, nor he who is constantly in fear of giving offence, nor he whose only aim is to avoid errors. Leadership falls to those who take it, those who seek rather than avoid responsibility, those who make quick decisions for others as well as for themselves. The leader must be a man of action. If a teacher happen to enter a classroom to find a riot in progress, he should not pause to survey the scene with indifference, nor treat the situation in a vacillating way, but issue his commands in a prompt and decided manner. Should children be about to 'duck' a newcomer, it is better to spring into the *mêlée*, throw off the assailants and release the victim than to stand aloof muttering ineffective protests while the deed is done.

On a new class, an impression should be made at the outset. The children quickly form opinions, and the first impressions which are made on their minds determine the character of those opinions. 'We had a new teacher to-day; he is very good. He can see if you are talking even when his back is turned and he is writing on the blackboard.' There are doubtless some pedagogical accomplishments which may radiate a higher light, but none adds more immediately to the respect of the pupils than a firm and vigilant attitude in the beginning. Some teachers drift into their work; their manner is furtive and their bearing apologetic. It is better to take charge of a new class with as much decision, energy and determination, as much perspicuity, vivacity and keenness as it is humanly possible to rally to the magisterial standard.

The Power of Suggestion

In all the particulars indicated above, the fundamental principle is the power of suggestion. Human nature reacts to suggestion readily, the most complete and perfect type of reaction being direct imitation.

The other day a teacher remarked to a visitor: 'Do you notice anything particular about my class of boys?' 'They look rather neat and clean, considering the locality.' 'Look again!' 'Why, yes, they all have their hair parted in the middle!' 'Exactly,' added the teacher. 'A few months ago I found my hair wearing thin at the side, and began to part it in the middle. This is the result. Also, you may observe that each boy wears a bow tie. Nothing has been said; it comes about because I always wear a bow tie.' Is it reasonable to assume that imitation, so potent in small matters, cannot be equally effective in great? Even when the reaction to suggestion does not take an imitative form, it does take a form favourable to discipline, provided that the suggestion has been of the appropriate kind. Pupils are always ready to follow a real leader. But, in order that he may be able to convey suggestions favourable to order and discipline, it is requisite that the teacher should be endowed with certain qualities no less desirable than those which have been already enumerated. Among such may be indicated adaptability, tenacity, enthusiasm, pleasantness, consistency, co-operation, sound judgment, good health and honesty or sincerity of purpose.

Other Factors in Discipline

Apart from the chief element in discipline, that is to say, the personality of the teacher and his power of conveying appropriate suggestions, there are several principles which contribute towards good class government.

One of these is to keep the pupils occupied. Another, closely related to it, is to maintain interest. A third is to have all materials ready. A fourth is to organize the class itself—monitors to help with the care of the room, the

distribution and collection of material, etc. A fifth concerns the skilful utilization of interesting devices and illustrations. A sixth, not always within the power of the teacher to compass, is to have a separate classroom. Although these principles of good discipline may be secondary to the teacher's personal power, they have this advantage, that once they have been firmly established the teacher has less occasion to draw upon his reserve of inner strength than would otherwise have been the case. Moreover, by having regard to these principles, discipline may be maintained in the teacher's absence. The well-trained class may be left for a time to itself.

Class Tone

The test of success in discipline is the prevalence or otherwise of a good tone. A class which has attained a good tone may safely be appealed to in matters of honour, such as going on with work while the teacher is absent, or avoiding any form of copying. At the same time, it would be unfair to tempt children beyond their strength in such a matter as not looking at one another's work, just as it would be unwise to tempt them in matters of honesty with money. An 'honour system' should not degenerate into mere evasion of responsibility on the part of the teacher. Good tone should only be relied upon when such reliance becomes necessary and reasonable.

Whereas other heads of English public schools had assumed that boys would lie, Arnold of Rugby, by trusting them, made them truthful. Boys would say: 'It was a shame to tell Arnold a lie—he always believed one.' But the pupils must realize that the teacher is not indifferent to sincerity; that, on the contrary, he feels about it so strongly as to banish the thought of deception from their minds.

There can be no good class tone without thoroughness. If orders have to be given, the teacher must see that they are carried out. Yet at all times drudgery, since it provokes a disorderly reaction and aversion to learning, ought to be minimized.

Thoroughness

Among other influences which contribute to good control may be mentioned position in front of the class so that all pupils can be seen easily, training pupils to respond to a glance of the teacher's eye when they are talking or inattentive, avoidance of loquacity, allowance for individual differences of ability and temperament, good preparation of lessons, a proper record of results of work, and adherence to all rules and promises, which should be as few as possible. These influences may be summarized under the concept 'thoroughness'. Almost at any cost, although a sense of relative values should not be obscured, the teacher must see a matter through if he desires to command respect. If a pupil talks when he should be listening, it is not enough to request his silence; the pupil must be made to feel that he does not desire to attract attention again in respect of the same offence. But this end may be effected quite as thoroughly by well-chosen words having reference to the lack of consideration shown to others, and to the need of co-operation in the work of the class, as by the infliction of severe penalties. A gentle but firm rebuke, maintained long enough to be unpalatable to the offender, and referred to several times if necessary to show that the offence has not been forgotten, is adequate for nearly all disciplinary purposes, unless the class should be inordinately large.

Rewards and Punishments

It will be seen that class discipline by no means depends chiefly upon rewards and punishments. It commonly happens, however, that the teacher's influence is insufficient to enable him to dispense altogether with these adjuncts, although to do so should be his ideal. Of rewards and punishments, the least satisfactory are those which appeal to the senses, such as sugar-plums—or the cane. Such influences bear no direct relation to morality; they do not make pupils better in character, but frequently very much worse. Praise and blame are preferable, but should be employed

judiciously and not too freely. Once a rebuke has been administered, thoroughness demands that the teacher should recur at times to the offence that has been committed, so that it may not be taken lightly, nor should the pupil be left willing to attract the teacher's unfavourable attention a second time. Fault should not be found with the class as a whole; the teacher must invariably retain the force of collective sentiment on his side. Offenders should be regarded as 'letting down' their fellow-pupils and as failing to maintain the reputation of the class.

Look back upon the history of punishment. Under primitive conditions its character was literally retributive, although the retribution may fall upon any member of the offender's tribe. Blood for blood, an eye for an eye, a tooth for a tooth. Subsequently the motive of an act was taken into account. Punishment came to be employed as a deterrent, rather than as vengeance. An example was made of offenders. But in recent times the function of punishment is beginning to be regarded differently. It is reformatory; the offender must be prepared, even in prison, for a useful and honest social life. Now, in the school there is no place for retributive punishment, little, if any, place for punishment as a deterrent, but ample scope for reformatory punishment, the object of which is the good not of others but of the offender himself. He should learn to do those things which he has left undone, repair those things which he ought not to have done, and discipline the qualities of his own conduct.

Some school punishments, although effective for the purpose in hand, are to be deprecated because they distract attention from work and induce disorganization. All spectacular penalties are open to this objection. In a mixed school, it is unwise to set a rude boy among the girls, even although this penalty may tend to subdue his naughtiness; or to require a talkative girl to sit with the boys. To compel a child to stand before a class, facing the wall, may become not only a mortification to the culprit's feelings, but a source of distraction to the rest. Many teachers are in the habit of

ordering individuals to 'stand out in front'; but how can a class with two or three members thus penalized be anything but disorderly? Detention affords a more reasonable form of punishment; yet it penalizes the teacher and has little effect upon the conduct of the pupil. If work is to be required during detention, the subject may become distasteful for the future. Moreover, detention may be undesirable on grounds of health. Too often punishment is inflicted where all that is needed is help.

The Use of Rewards,

Examples may be quoted of the judicious employment of rewards. 'A very effective system of obtaining good work from the class was used by one of my teachers. This teacher kept the names of her pupils in a book, and at the end of the lesson those girls who had put forward the best efforts were awarded a certain number of marks. These girls were praised before the others, with the result that the others worked very hard to gain marks also. At the end of the year each of the two girls who had gained the highest number of marks was given a prize by the teacher.'

Little children love a flower or a star to be drawn above well-written exercises. Groups or classes may compete for a banner.

'Most pupils in primary schools like the position of monitor or monitor. It is wise, therefore, to allow the two pupils who work best to hold the position for one month. This is a practical way of praising them.' Another valued privilege is exemption from the weekly test, during which the most satisfactory pupils may be permitted to engage in work of their own choosing.

'Sometimes an effective reward is the granting of a privilege to a certain child, or giving him a duty to perform which he regards as an honour. At one primary school it was the custom for the sixth-class pupil who had been early every morning to ring the bell for the others to come into school. This system was so effective that at times it was

hard to grant the privilege to everyone who had earned it.' In some schools each child is graded in each subject as bad, fair or good, the record being kept on a board open to view.

A certain teacher allows children who have worked well during the lesson to leave the class a few minutes before the bell; or perhaps during the lesson she writes their initials on the blackboard. Quite a small reward, but the children feel very proud.

A child who was ever ready to answer questions, but was apt to bounce out of her seat fussily was ignored by the teacher. Finding herself disregarded, this pupil soon abandoned the noxious habit.

Rational Punishment

A type of punishment which has been found effective is that which involves a reasonable connection between the offence and the penalty, a *nexus* which the pupils can appreciate. One ex-pupil writes: 'On Friday afternoons during the last hour we had our only free period, and everyone looked forward to it. If the teacher wished to punish any of the pupils, he would require them to sit very quietly in one corner of the room with a lesson-book, only to see the others drawing, painting, modelling, arranging the library books, or doing whatever they pleased. It was hard to have to sit on the seat in the corner, which was reserved for offenders, and watch the others enjoying themselves. When this practice was first instituted, quite a number might be found on the ignominious seat on the Friday afternoon, but it was not long before we dreaded that seat, and in a very short time there were but two or three who had earned it.'

By the following confession, the principle of rational punishment is vindicated: 'During a lesson when we had a new mathematics teacher—the head mistress—I was called upon to do a certain problem on the board. Through inattention, I misunderstood the question, and worked out a different problem. Having completed the work, the teacher asked me what I had been required to do. I was ashamed to have to

give an inadequate answer. I was told to do the problem I should have done in the first place. In subsequent lessons the teacher found occasion to mention my foolishness, with the result that I paid great attention to avoid a similar occurrence.'

Deprivation of Privilege

The following confession illustrates the value of negative as compared with positive punishment. In this case the failure to learn was due to inattention: 'One of the most suitable punishments which I can remember happened to me early in primary school life. I was always very fond of reading, but could never take much interest in arithmetic. My tables were so badly learned that at last the teacher forbade me to read any more books until I knew them perfectly. He asked my mother to help him carry out this punishment, with the result that I found myself debarred from reading even the school magazine. Needless to say, it was not very long before my tables were perfectly known.'

On a similar principle, careless or inattentive pupils may be sent to another room to study while the class is engaged upon an interesting 'number game' or an experiment in dramatization; or may be temporarily debarred from participation in sport.

Punishments Should be Mild but Firm

Both frequency and severity of punishment are symptoms of pedagogic ineptitude. The severe teacher arouses defiance; his victim becomes a hero. On the other hand, punishment when rare, even though in itself mild, is dreaded, and the pupil who incurs it is held in no esteem by his fellows. Some teachers punish children for persistent tale-bearing, but for this as for many other offences the proper treatment is a reasoned discussion with the pupil who has contracted this unpleasant habit. On a somewhat similar principle, in one instance, two boys who had been eating in class were paraded, each being required to tell the other how greedy and foolish he had been. The offence was not repeated.

An old-fashioned teacher was in the habit of punishing his pupils for every little offence, until they became unresponsive, backward and timid. He was succeeded by a teacher who had caned only two pupils in his many years of teaching, with the result that soon, under the influence of his kindly methods and inducements, the children gained confidence, and rapidly made up the ground that had been lost. It is surely time that teachers who are so unskilful that they depend habitually upon corporal punishment should be sent away to seek some vocation for which they may be better fitted. Corporal punishment is too great a power to be entrusted to one individual over another, unless under the strictest safeguards and limitations. For most offences it is enough to indicate that a pupil is not 'playing the game', or that he is 'letting down the class', or that he is not fair to his parents. Thoroughness, not severity, is required; the individual blamed may be singled out from time to time until he becomes desirous of rehabilitating himself in the eyes of the teacher and of his fellows. Mere sarcasm will not serve, the right attitude of mind to be produced by censure being not indignation or resentment, but shame.

Humour

A sense of humour is usually an advantage, but few teachers can afford to awaken boisterous laughter at frequent intervals, nor is such a degree of relaxation desirable. The quality of sympathy is indispensable to the cultivation of a good 'tone'. When occasion demands, the teacher should be able to become one with his pupils, putting himself in their place and taking nothing for granted. The humour of school children is naturally crude. True wit passes them by without touching them; but if the teacher should call a red-haired boy 'bluey', they will probably roll in their seats with unquenchable laughter. It follows that jests ought to be used sparingly, and chiefly to relieve tedium.

Detection of absurdities has been employed as a test of intelligence, since the power to detect the absurd involves a

larger view of the situation than is disclosed in the absurdity itself. Why does one smile on reading such a notice as: 'When the water covers this sign, go round by the bridge'? Only the more intelligent members of a primary class would be likely to detect the incongruity. Doubtless exercises of this kind may be employed by teachers from time to time in order to counteract the disorderliness which results from tedium. Good teachers commonly keep by them a stock of anecdotes, epigrams, witty sayings, riddles and conundrums which may be introduced as appositely as possible into the warp and woof of their instruction in such a way as to give point and relief. Quickness of wit may be enlisted by many devices other than humour. A tiresome lesson in mathematics may be relieved by the question: 'If a goose weighs six pounds and half its own weight, what is the weight of the goose?'

Cruel laughter in children, as at deafness or lameness, is to be deplored, but they may well learn to laugh kindly at themselves or at others. Laughter in itself is no doubt a valuable form of relaxation, a natural corrective to stiffness and rigidity, and an outlet for repressed tendencies of many kinds. But irreverent stories, although they have this kind of excuse behind them, are eminently unsuited to school use. It is equally true that a school without laughter can never become a rational ideal. Children have a right to the unexpected; and unexpectedness, except in grave circumstances, implies the right to laugh.

Contra-suggestibility

Some children are contra-suggestible, and as such present a problem of real difficulty. Tell them to be quiet and they seek an opportunity to make a noise; ask them to respect public property, and they want to break a window; request them to live up to the reputation of the class, and they seek to undermine it. Such children delight in giving undesired answers and in opposing their will-power to that of the teacher. Usually their actions display only a wanton

obstinacy, but occasionally a ready wit and a true originality may command respect. 'Well, John, back again to the land of promise?' inquired one teacher. 'Back to the land of Canaan, you mean,' was the contra-suggestible reply.

Reasoning

The teacher may reason with children from time to time, so that they may understand why good order or obedience is necessary. In this, as in other matters, they should learn the distinction between right and wrong. When commands have to be given, a positive form is better than a negative, since negative commands may suggest the very offence which it is desired to combat. Children of normal intelligence can reason about matters which they understand, not in syllogistic form but in essential process, as early as the age of six. It is extraordinary how much higher is the intellectual power of a child even of six years than that of a dog. An intelligent dog can readily make associations, but never reaches any facility in weighing, comparing, or selecting the essential from the accidental elements of his experience. A dog had to be put in an outhouse each morning when his master left home, lest he should follow him, not to school, like Mary's lamb, but to office. Soon it came about that whenever his master left home the dog would walk to the outhouse and remain there without being shut up, never suspecting that all that was necessary was to abstain from jumping the fence in pursuit. When his master's daughter left for school, the dog was put for a time on the chain. After a few days of this sort of thing, he would run to the chain and stand by it until the girl had gone. But a young child is capable of original rational processes of an altogether higher order. When six years old the writer, who knew as little about the world then as can be imagined, was vehemently persuaded by some older boys and girls to steal cherries. They would not let him alone, as they could not afford to have a witness not implicated in their crime. He remembers how he argued that they were foolish to think that he would tell. He also

suspected some subtle fallacy in their chief argument that the orchard belonged to a banker, that one of the raiders was the daughter of another banker, and that among bankers all things are in common. Did his infant virtue finally succumb to their sophistic logic? Perhaps. But all the children could reason, and deserved their fate on the morrow.

Self-government by Pupils

Young children must be subject to the will of another, but when the time comes to leave school they should be in a position to govern themselves. How is the transition to be accomplished? If the democratic oracle be consulted, it will declare that only by exercise in governing can individuals learn to govern. From the beginning the pupils should not be made acutely conscious of the fact that they are being governed externally; within limits they should enjoy the happiness of self-determination even in the kindergarten. Frequently this right is conceded; but external control becomes more insistent in the 'big' school, instead of less so, as might be anticipated from the phenomenon of growth in wisdom and stature. Too often the primary-school teacher proceeds 'to knock this idea of doing as they like out of them'. He takes what appears to be the line of most resistance. He adopts 'short cuts' to his goal, and 'short cuts' are proverbially long. Instead of following the stream of instinct, he dives athwart it, and wonders that his efforts are so wasteful, tiresome and disappointing. Wherever possible, it is wise to respect freedom and to follow nature.

Books have been written upon self-government by pupils, but the essentials of the situation remain always the same. It is well for the pupils to feel that the responsibility for order is their own, and even to make it actually their own within a system of wise and necessary limitations; but in reality it is always the teacher who governs. The success of any system of class or of school self-government will be found to depend upon the personality and ardour of the teacher who administers it. At one school a plan was

adopted whereby pupils on appeal might have fair trial for any alleged offence before a 'magistrate', who was the 'first assistant' on the staff. At the trial, witnesses were called by the teacher who was bringing the charge, as well as by the pupil who was accused; but the system soon broke down because of its unpopularity among the staff. In the course of the 'trials' the teachers were almost invariably proved to have been in the wrong! Fortunately, it was not permitted that pupils should bring charges against their teachers.

Discipline and 'Nerves'

Investigations conducted by Dr. Millais Culpin and Dr. May Smith seem to indicate that a real capacity for directing the work of others is rare. Yet such a capacity is expected of every teacher. If the business man must learn to manage his subordinates well, so must the pedagogue. Neither can afford to be too diffident of his own judgment, too easily perturbed by any challenge, too mistrustful of being in the right. On the other hand, neither should take the irrational stand that he is invariably in the right, or that he dare not admit having been in the wrong.

Some teachers may be described as highly strung, 'nervy' or temperamental. True neurasthenia incapacitates the sufferer from work, but the lighter nervous disabilities are merely a hindrance to the teacher himself and an inconvenience or burden to his pupils. Indecision, anxiety and a feeling that something has been left undone create a classroom attitude of uncertainty and distress. Noises which have no effect upon teachers who are free from nervous symptoms may become intolerable to the nervous; but the latter are more often critical of their own efforts, so that a moderately nervous disposition, so far from impeding efficiency, may, under certain conditions, become its ally.

Leadership

The final theme of this discussion shall be leadership, a quality to which attention was directed in the beginning.

Leadership, the alpha and omega of good discipline, includes many elements and takes diverse forms. The leader sometimes takes, sometimes gives, ground; sometimes asserts and sometimes effaces himself. It may be doubted, moreover, whether the best leader in one type of situation can possibly be the best in all others. The hour calls forth the man; but different hours call forth different men. A Lloyd George may be demanded in a turbulent, a Baldwin or a MacDonald in a peaceful, period. For a mob a Robespierre, for a public school an Arnold. But the teacher has to be able to take the lead in a great variety of situations. For him the ideal temperament is not that of a demagogue, nor that of a philosopher, nor that of a man of affairs. It is a mixed, an eclectic, temperament. He should be practical but scholarly, active but reflective, ardent but self-controlled, a kind of *ornithorhynchus paradoxus* of humanity.

'Our teacher is a beast, but a just beast.' For how long has this description been held up as the highest praise that can be lavished upon a schoolmaster? Yet the 'just beast' theory assumes an attitude of domination which has been found to be unnecessary and futile. It is not the teacher's business to expand his own personality, but to let his pupils expand theirs. They should not be over-disciplined. It is clear, indeed, that an injury may be done to pupils by making them too docile. It is not good that they should lose their natural elasticity, and become malleable stuff. When the materials and methods of instruction have been made sufficiently attractive, the teacher can afford to subordinate himself. He needs few 'don'ts' and few artificial laws, relying upon the reasonable use of freedom. In so doing he is enabled to utilize the quality of leadership in others, giving to suitable pupils responsible monitorial positions in the knowledge that the others are amenable to their influence.

Natural Consequences

As a protest against the arbitrary infliction of rewards and punishments, the discipline of natural consequences has

much to recommend it. Both Rousseau and Herbert Spencer set great store upon this doctrine. But nature's punishments are apt to be cruel and capricious; the natural penalty for neglecting to heed the sound of a horn may be to get run over, or for playing with fire to be burned to death. Nature may distinguish only between the quick, those who get out of the way, and the dead, those who don't. Assuming that only the milder penalties of nature are to be visited upon children, it remains true that even the most arbitrary of punishments, such as censure or the cane, have their source in human nature. What is wanted is a discipline not of natural but of rational consequences. The child who disturbs a class may be set to work by himself; he who makes a litter should be required to clean it up. In these instances a reasonable connection may be established between the offence and the penalty; and moderate punishments, involving reasonable connection with recognized offences, are generally accepted by pupils as just.

CHAPTER XV

THE ART OF QUESTIONING

THE ultimate use of questioning is to arrive at a common understanding between different minds, and so to make knowledge, action and sentiment social rather than individual in character. The socialization of mind may be regarded as the special function of intercourse, and intercourse is conducted mainly as a process of question and answer. In primitive communities, questions are asked in order that a common standard of action may be reached by members of a tribe; under the complex conditions of civilized life the need for questioning of this kind has been greatly multiplied.

Questions Asked by Pupils

When, as commonly happens in the school, one party to intercourse is vastly better informed than the other, questioning should come theoretically from the more ignorant party—the one who does not know should seek knowledge of the one who does. Obviously, this position is likely to arise only when the ignorant party experiences a genuine desire, a 'felt want' of information. This happens when a problem so presents itself as to demand a solution which is not readily and easily apparent to the individual concerned. The person who has lost his way asks questions with a genuine desire for an answer, and so does the boy who cannot see how to put a secure roof on the rabbit-hutch which he is constructing for his pets. Accordingly, the greatest skill in questioning is shown by the teacher who does not question much himself, but makes his pupils desire to question him upon the subject in hand. Feeling the inadequacy of his own knowledge, the skilfully-taught child endeavours to share in the great fund of social knowledge which the mind of his teacher represents. Children like above all to do things, and by giving them work which they wish to do the teacher may place them in the position of having to come to him with

their questions. The object of this kind of questioning is to obtain intellectual, practical or æsthetic guidance. It goes without saying that the teacher should respect all questions asked by a pupil in sincerity of purpose: these are the child's prayers for knowledge.

The Use of Projects

It is not strange that ordinary teachers should regard the provision of situations which will stimulate their pupils to ask questions as too ingenious and too irksome a task for their own abilities. Good teachers, however, have always attempted to provide such situations, which are nowhere better illustrated than in the provision of 'projects' or continuous undertakings which have been sincerely adopted as an aim by this or that class of pupils. The scheme of constructing a Malayan village in the corner of a playground would involve a great number and variety of questions on the part of pupils, and so would a fairly detailed study of the leading industry of the locality in which the school is situated. But apart from such ambitious plans, which should not be entered upon without much thought and preparation, the skilful teacher will frequently be able to place his pupils in situations which compel them to come to him for help and advice. Individual work such as is practised under the Dalton plan is a case in point; and in doing any variety of manual work the earnest pupil will be likely to find occasions to consult his teacher.

Questions Asked by Teachers

Although theoretically questions should come from the pupils, in practice most of them are asked by the teacher. This is not necessarily due to any deficiency in respect of skill, ingenuity or industry on the part of the teacher himself. It would appear that even the most gifted teachers, such as Socrates, have asked most of the questions themselves. Of all the uses of questioning, only that of acquiring information may be said to presuppose an initiative on the

part of the pupil. Questions asked for other reasons belong properly to the teacher himself, who may question in such a way as to develop understanding or reasoning power, to test ability, knowledge, skill or sentiment, to arouse interest or to challenge or stimulate attention. When Socrates asked, 'What is justice?' he propounded a question that was destined to open the doors of a noble palace of thought. When he inquired: 'When is a man likely to succeed best—when he divides his exertions among many trades, or when he devotes himself exclusively to one?', he was developing the reasoning power of his disciples. When he asked, 'Which, then, are the plaintive harmonies? Tell me, for you are musical,' he tested knowledge. When he demanded of Adeimantus, 'Do you not believe that one pugilist trained in the most perfect manner to his work would find it easy to fight with two rich and fat men, who do not understand boxing?', he aroused the interest and challenged the attention of his hearers. Thus the four questions quoted were directed to four different ends.

Questions Asked to Obtain Information.—Should a pupil ask his teacher, 'What is the capital of Russia?', his object is to obtain information; should a teacher ask the same question of a pupil, his object is to test the attainments of the latter. Occasionally, indeed, a pupil may attempt to test the teacher's knowledge, or the teacher may have a genuine desire to obtain knowledge which the pupil possesses, but such an inversion of natural functions is relatively rare. Generally, the pupil desires to know; the teacher to test the pupil's knowledge. It was in quest of knowledge that Crito asked: 'Who was it, Socrates, whom you were talking with yesterday in the Lyceum?' But it was for testing, not for acquiring information, that Socrates put the question to Glaucon: 'Which harmonies, then, are effeminate and convivial?'; for Socrates knew the answer already.

Questions Asked to Develop Understanding.—So important to the life of the mind is the principle of association

or continuity that the teacher should ask many questions in order that the links of thought may be joined as perfectly as possible into serviceable chains. Reasoning and understanding depend partly upon native ability, but largely also upon sound mental organization. Hence the need of developmental questions which tend to exercise the powers, supply the gaps, and rectify the errors of the intellect. At such questions Socrates was an adept. Socrates did not tell his disciples that the men best fitted to govern a state are those of the highest wisdom and culture. Instead, he inquired:

'Can you mention any life which contemns state-offices, except the life of true philosophy?'

'No, indeed, I cannot.'

'Well, but the task of government must be undertaken by persons not enamoured of it; otherwise, their rivals will dispute their claim.'

'Unquestionably it must.'

'Then what other persons will you compel to enter upon the duties of guardians of the state, if you discard those who understand most profoundly the means of attaining the highest excellence in the administration of a country and who also possess honours of a different stamp, and a nobler life than that of a statesman?'

'I shall not discard them,' he replied, 'I shall address myself only to them.'

(Plato, *Republic*, Book VII, trans. Davies and Vaughan.)

As a result of this conversation, although the mental work had been originally done by Socrates, his disciples understood his logic better than if they had not participated in it. Every teacher, accordingly, should endeavour to become expert in the 'midwifery' of ideas. 'What is the average annual rainfall of the Sahara?', is a question designed to test knowledge; but 'Why is the rainfall so restricted?' is a question calculated to stimulate and to develop thought. To put many such questions to his pupils is the mark of an intelligent teacher.

Questions Devised as Tests.—The simplest form of testing is that which is sometimes known as catechization. Facts having been taught as such, are demanded from the

pupils in the form in which they have been taught. The catechisms of various churches provide familiar examples of this type of questioning, and so do many categorical tests which are applied in scientific education, the answer to which admits of no variation. More often, however, even when testing information in which a class has been thoroughly drilled, the teacher prefers to ask questions in an unfamiliar guise, and to expect answers which are true in substance, but capable of expression in a variety of forms. The revision of a lesson may follow any of the types of procedure which have been outlined in an earlier part of this book, and it is seldom desirable that the revision should be conducted in precisely the same way as the original lesson. Even testing, that is to say, should include an element of novelty, thus providing opportunities for the exercise of original thought on the part of the pupils.

A class may be tested, moreover, not only for knowledge but also for ability. The extent to which the 'general ability' of pupils of the same age varies is so great that since the time of Binet a great amount of skill and industry has been devoted to the problem of discovering what the abilities of individual children are. For this purpose the Binet-Simon tests in one form or another are unequalled; but many teachers prefer to adopt group tests of intelligence, which, if not quite as accurate as the individual tests of Binet and others in their results, are more quickly and easily applied. Burt's group tests of intelligence will be found to be of great practical value. It has been found that unless guided by the application of standardized tests the opinions of teachers upon the abilities of their pupils are liable to grave error.

Tests of skill in a given direction, for example in writing, in woodwork or in art, are not difficult to devise or to apply. It is often easier to discriminate between differences of skill than between differences of knowledge. Standardized scales for the measurement of writing, for a given grade or class, have been constructed by Thorndike and others; and there is

no doubt that much fickleness in marking can be eliminated by their application. Proficiency in skill in the four fundamental operations of arithmetic may also be reliably measured when standardized tests are available for the age or year of school concerned. Apart from such instances, questions on tables in arithmetic are virtually tests of skill as much as of information, since it is right habitual reaction that is being tested.

The intellect can be tested more readily than the feelings. While there may be no great difficulty in devising questions which are likely to reveal the extent or quality of the knowledge or skill of the pupils, it is not so easy to test their sentiments, tastes or appreciative attitudes. Perhaps the best kind of test on the side of the affections is one of selective power. If a pupil can select a meritorious picture from a number of mediocre ones, a good stanza from an otherwise undistinguished poem, the best song from those that he knows, the right course of action among specious alternatives, then something may be inferred regarding his tastes and dispositions. But the subjective character of feeling will always make testing more difficult in this field than it is in respect of knowledge and of action.

Questions Asked to Arouse Interest or to Stimulate Attention.—Sometimes the aim of the teacher's questions is neither to develop the understanding nor to test the ideas of his pupils, but simply to arouse their interest or to stimulate their attention. The assumption in this case is that time lost in asking irrelevant questions may be more than redeemed by the concentrated attention to which these questions will ultimately lead; and this assumption is just, provided that the teacher does not go too far astray from his main theme. 'Who has a garden at home?' 'Who has any flowers out just now?' 'What flowers are out at present?'—the object of this interrogation may be to lead up to an interest in Shakespeare's lines: 'I know a bank,' etc. Most good teachers make an invariable habit of asking questions prior to the

introduction of any new work, simply in order to arouse interest—getting up a head of steam, as it were, before they attempt to go forward.

For an illustration of skilful questioning, in which interest is aroused some time before the point of the dialogue is reached, let us turn once more to the *Republic* of Plato (trans. Davies and Vaughan):

'You will notice,' Socrates remarks, 'in dogs this other trait, which is really marvellous in the creature.'

'What is that?'

'Whenever they see a stranger they are irritated before they have been provoked by any ill-usage; but when they see an acquaintance they welcome him, though they may never have experienced any kindness at his hands. Has this never excited your wonder?'

'I never paid any attention to it hitherto; but no doubt they do behave so.'

'Well, but this instinct is a very clever thing in the dog, and a genuine philosophic symptom.'

'How so, pray?'

'Why, because the only mark by which he distinguishes between the appearance of a friend and that of an enemy is, that he knows the former and is ignorant of the latter. How, I ask, can the creature be other than fond of learning when it makes knowledge and ignorance the criteria of the familiar and the strange?'

'Beyond a question, it must be fond of learning.'

'Well, is not the love of learning identical with a philosophical disposition?'

'It is.'

'Shall we not then assert with confidence in the case of a man also, that if he is to show a gentle disposition towards his relatives and acquaintances, he must have a turn for learning and philosophy?'

Now in this portion of the dialogue the only vital question is the last one; the others have been asked for the purpose of arousing interest in the proposition that the guardians of an ideal state must receive a training not merely physical, but intellectual also. The conduct of the dog provides an analogy, but not an argument. All that Socrates desired was to stimulate by his questions the mental activity of his disciples, so that they might welcome the principle of a philosophic education. From such examples it will be seen

that an important role in the intercourse between teacher and pupil is played by the stimulative question.

Then there are the questions of a purely rhetorical kind, comparable to Cicero's '*Quid*', the object of which is merely to quicken the processes of thought and, sometimes, to allow to the speaker a much-needed pause. 'Are you attending?' 'Do you call that a drawing?' Since the effect of such questions can be but momentary, the teacher will do well to rely mainly upon other devices to preserve continuity of interest in his instruction. But all will admit that there are times when the flagging attention of a class may be restored by a brisk rhetorical question.

Formal Aspects of Questioning: Clarity

Although circumstances may justify the employment of almost any type of question, there are certain standard principles of form with which every teacher ought to be familiar. The first is that the language in which the question is couched should present no unnecessary difficulties. The meaning of its terms should be clear to the pupil. Simplicity, definiteness, absence of ambiguity are qualities which the class has a right to expect.

A clear question would be: 'To what class of heavenly bodies does the sun belong?' But such a question as the following would err against clarity, definiteness, conciseness and simplicity: 'Is the sun a heavenly body of the same class as the numerous bodies which are to be found at varying distances from it of from one-third to thirty times its distance from the earth?' Such a question would be intolerably confused, indirect, incoherent, rambling and ill-expressed. But in search of clarity of expression the teacher may be tempted to fall into unjustifiable colloquialism or slang. 'If you were hiking from York to London, what rivers would you strike?' Here the final word of the sentence does violence to every canon of appropriate expression. 'Hiking' may be questionable; 'strike' lies beyond the pale.

Questions Should be Neither Repeated Nor Altered

A second principle is that a question once propounded should be allowed to stand until it has been answered. It is neither desirable to repeat the question, thus encouraging inattention and discouraging promptness of response, nor to vary its terms, thus producing confusion of thought. A common error of beginners is to repeat the question a number of times before taking an answer; or when an answer has been given, to repeat it after the pupil. Pupils must learn both to attend to the teacher's words and when they speak to speak audibly. Likewise, to alter the form of a question before it has been answered is to introduce an unnecessary and inartistic element of confusion into the work. 'Which is the longest river of the British Isles?' 'Don't you know a long river in the west of Great Britain?' 'Who can tell me the name of the longest river?' 'You won't say The Thames or The Shannon, will you?' Surely the teacher should have rested on his first question, instead of becoming maudlin.

Continuity

A third principle of good questioning is continuity. Questions should be relevant to the theme, and should stimulate thought that is not scrappy but consecutive. Perhaps the highest art in questioning, such as an eminent barrister may be expected to acquire, is that of developing a theme surely, steadily and consistently by means of a series of questions and answers. In this way the system of thought of the pupils may be organized and perfected. One question should grow from another like a flower from the bud. The questions should be graded in accordance with the capacity of the pupils, should frequently involve continuous answers, and in respect of difficulty should err neither by excess nor by defect. The following example of consecutive questioning may be adduced:—

'Which of the heavenly bodies appears to you to be the largest?'
'The sun.'

'What kind of star is the sun?'

'A fixed star.'

'Why is the sun described as a fixed star?'

'Because it is the centre of a system of stars, and is not one of the planets, which revolve about a fixed star.'

'Which is the most important of the heavenly bodies to the inhabitants of the earth?'

'The sun is the most important.'

'Why is it so?'

'Because without the heat of the sun there could be no life on the earth.'

'What other boon does the sun confer on the earth besides heat?'

'The sun also confers light.'

'How does it confer light?'

'By means of rays.'

'Do these rays come directly or indirectly to the earth?'

'They come directly.'

'How does the light of the moon come to the earth?'

'It comes indirectly, being reflected from the sun.'

'Let this mirror represent the moon. Let this globe represent the earth. Who will place the moon so as to reflect the light of the sun towards the earth?'

The teacher is recommended to prepare in detail a series of about twelve consecutive questions to be asked in the course of an oral lesson. In its higher forms the art of questioning is a practical application of the science of logic, and is not to be mastered without much thought and practice. More and more attention begins to be paid by teachers to the subject of reasoned discourse, technically known as dialectic, the mastery of which is so perfectly exemplified in the Platonic dialogues. By practice a teacher will soon find how to make the best use of the answers that have been offered, even the errors of which may subserve the main purposes of the lesson. Instead of rejecting faulty answers, it is wiser to clear up the misconceptions which they represent and to turn to account whatever elements of truth they may contain.

Reasonable Difficulty

A fourth principle is that questions should be neither too easy nor too difficult. They should not encourage guess-

work. To inquire of a class, 'Is the sun a planet or a fixed star?' is to give to every pupil a fifty-per-cent chance of being right, of which he cannot be blamed for availing himself. To this class of questions belong all those which can be answered by 'Yes' or 'No', unless, as frequently happens, such questions have been put merely in order to preserve touch between the mental processes of the pupils and those of the teacher, or for rhetorical purposes. 'Have you ever tried to look at the sun?' can be answered by 'Yes' or 'No', but does not encourage guesswork; but 'Is the earth flat?' may do so. If on any occasion a question has been asked the answer to which does not involve a reasonable degree of mental activity, it should be followed without delay by one more worthy of the pupils' mental calibre.

Leading questions should be employed only with discretion. Although at times they may be justified as a means of towing the minds of children, like a string of barges, after that of the teacher, leading questions too often produce a perfunctory acquiescence in a series of propositions, instead of eliciting those sincere, genuine, personal acts of judgment which every good teacher prefers to invoke. 'Don't you know that the sun is a fixed star?' is a leading question, supplying its own answer. Now, in the dialogues of Plato many leading questions are asked, but only as an introduction to a vital problem which is calculated to tax the utmost resources of the minds of the disciples of Socrates.

But if questions may be too easy, it is certain that they may be too difficult for a class. As Quintilian says, the teacher's problem is to come down to the level of the learner. A question like the following is too hard for school children: 'In what manner did the studies of Pasteur and Koch upon fermentations and gangrenes give a fresh impetus to science?'; yet the essentials involved in this question could be put into a simple form which young children might be able to understand.

The formal qualities of good questioning, then, are (1) simplicity, clarity, definiteness and conciseness; (2)

avoidance of mere repetition or unnecessary variation of a question once asked; (3) continuity; (4) requirement of reasonable but not undue mental exertion. Guesswork should be eliminated and leading questions reduced to a minimum. Answers if wholly wrong may be rejected; if completely right, accepted; if imperfect, utilized to the best possible advantage to the conduct of the lesson. ✓

CHAPTER XVI

THE ART OF EXAMINING

THE main objects of examinations are:—(a) To test the work of pupils; (b) to cause that work to be systematized and revised; and (c) to serve as a stimulus to that work. (a) Oral questioning under class conditions is inadequate to determine the amount and quality of the attainments of each pupil or the degree of perfection with which attainments can be expressed. (b) Moreover, there is nothing like an impending examination to induce a pupil to set his knowledge in order and to organize its elements in their due proportion and relation to one another. (c) Finally, without examinations, a great stimulus to effort would be wanting. Many of the bright children whose education matters most to the community look forward to examinations as a means of exercising and displaying the abilities of which they are conscious.

Examinations which affect school life may be divided into two classes, internal and external. In general, the former are to be preferred, since the children's own teacher may be presumed to know best what should be the scope and limits of the tests to be applied to them, and what standard of answering may be reasonably exacted. On the other hand, external examinations provide a better guarantee of entire impartiality, and are the simplest means of comparing the achievements of pupils at one school with those of pupils of another.

Internal Examinations

Tests may be employed not merely to register progress but also to keep up a standard of effort from day to day. One monitor may record the results in dictation, another those in arithmetic. The results may be entered while the children are engaged in writing, names being called by the monitor in a quiet voice. Other forms of testing, one or

another of which should be applied each week, include (a) lists containing numerous questions, each of which may be answered in a very few words; and (b) short answers of an 'essay' type to questions which have been announced on the preceding day. Places may be taken by children in class in accordance with the results that have been recorded. In default of a properly-constructed scale, a good piece of written work by one pupil may be taken round the class as a standard by which the work of other pupils may be measured. At regular intervals, standardized tests, if such be available for performance in the fundamental operations of arithmetic, or for spelling or other subjects, may be applied in order that the pupils may be able to measure their own performances by those which have been proved to be normal for their grade or age. The better to test sewing or wood-work, many teachers keep a standard model, with which each piece of work done by pupils is compared.

In order that work may be marked with due economy of time, some teachers cause the exercise books of pupils to be exchanged and mutually marked. Others aim at going through the work of each pupil together with the pupil himself. A useful device is to assign certain 'contracts' to be done in the course of the month by each member of the class, the completion of each 'contract' by any pupil being at once recorded in its appropriate square on a chart which hangs on the walls of the schoolroom. The chart is ruled so as to show the names of the pupils on the left-hand side, and the designation of the 'contract'—an essay, map, piece of woodwork, sewing or other assignment—on the top of the chart, so that it can be seen at a glance in what square a record of the completion of any 'contract' shall be entered.

The marking of examination papers must not be scamped nor taken for granted. Various systems of marking have been employed. The majority of teachers mark papers on a percentage basis. Some look only for certain major points which ought to be mentioned by the examinee; thus if there are five of these, and the candidate mentions only three, he is

marked six out of ten. But this method is most mechanical; obviously a candidate who deals adequately with three points may have answered the question better than another who mentions four. In marking answers of the essay type, there is in fact no escape for an examiner from the obligation to summon up the whole resources of his mind to an act of judgment. There is something to be said for an alternative plan of marking, that of placing the answers in five grades, more or less, instead of marking them numerically. The numerical plan is preferable when it can be accurately administered; otherwise the plan of alphabetic grading would appear to be the more honest. It has been amply demonstrated that a strong subjective factor is present when answers are being weighed in the balance even by a competent examiner. The value of answers of the 'essay' type is likely to be estimated very differently by different examiners. Questions of the 'new examination' type may be set with a far greater probability that the answers will lend themselves to objective marking. For, if every answer must be definitely right or wrong, the difficulties of an examiner are reduced to a minimum; and only under these conditions are different examiners likely to form identical judgments.

External Examinations

There are some systems of education that appear to be dominated by examinations from top to bottom. Under these conditions the danger is that throughout their scholastic careers both teachers and pupils may come to regard the examination system with the same veneration which a villain at one time paid to the high tower of his overlord. Every kind of educational problem, however remote, tends to be coloured by the fetish of examinations. Nothing fresh can be done for fear that it may affect the 'examination classes'. New subject-matter, new methods, new experiments of any kind are viewed with suspicion.

Such systems, although they may need overhauling, should not be too rashly condemned. Against the disadvantage of

immobilization may be set the advantage of standardization. Pupils, teachers and public know where they are, for within the limits of the system they can measure their own progress and that of others with some degree of definiteness. Under the stimulus of competition, standards are raised higher, and there is no danger of 'soft' pedagogy. The goal of the student, if narrow, is definite. Able pupils have every confidence in a system which precludes fear or favour. Examinations may become a fetish, but there is nothing diabolic about them. Whenever, indeed, there is public competition for scholarships or bursaries, it is difficult to see how the public examinations can be replaced. Systems of accrediting, such as are adopted in many American states, do not work particularly well. Frequently they amount to an arrangement by which any pupil who has completed a secondary school course may be admitted to a college or university without examination.

Yet public examinations may be unsatisfactory, too. It is not always that the best students do best under examination conditions. Candidates may know the subject well, but not the particular questions; they may be afflicted with examinee's nerves, or suffer from illness. It may be that the atmosphere of the examination should be identical with that of the classroom, that work marked through the year, with possibly an emphasis on certain peaks and crises, should furnish the basis of judgment, and that cramming should not be encouraged. All this is less a condemnation of the public examination than an argument for its reform. Probably examinations should partake less of the nature of tests of achievement, more of the nature of tests of intelligence, but there is some health in them. Perhaps each school might be invited to provide an order-of-merit list of the candidates whom it sends up; this list should be taken seriously into account before the results of examinations are made final. But even this arrangement would be susceptible of abuse; and it has been amply proved that the teacher's opinion regarding order of merit is often wrong.

In public examinations, the papers which have been set in any given subject may be divided into two, three or four sections. Each candidate may surrender his paper in two, three or four bundles. Each bundle should be marked by one examiner, with the result that two, three or four examiners will have been engaged upon sections of each candidate's paper. In this way the subjectivity of marking may be diminished and the possibility of accidental injustice being done to any candidate may be decreased.

Types of Examination

In the Middle Ages, the most important examinations, those for the baccalaureate and the master's degree, were conducted orally. It is clear that this method will always have an advantage over writing if it is desired that not merely information, but the readiness with which information can be conveyed to others should be tested. In the oral examination there are facilities for probing the extent and depth of knowledge in a given direction which do not exist elsewhere. During each lesson, teachers are still accustomed to test their pupils' information by oral questions; and some prefer to register the quality of the answers in almost every subject by marks which they record in a progress-book.

By oral questioning, however, only one candidate can be thoroughly examined at a time. For this reason among others, a written test has come to be the normal form of examination. Until recently, written examinations were mainly composed of questions which demanded answers of an expository or descriptive type. Occasionally, however, these might be varied by questions which demanded a precise answer in one word, or in a few words. A test of the descriptive type might read: 'Write a short account of the basin of the Mississippi River.' A question of the precise, factual type might be: 'What and where are the following: Tyne, Dunedin, Hatteras, Etna, Tundras?'

In the 'old' examination, questions of the descriptive or expository type prevailed. Questions began in some such

way as 'Discuss', 'Describe', 'Explain', 'Give an account of'. Virtually a series of short essays was exacted from the candidate. In this way a high premium was set upon ability to write English correctly. Literary power was a key to all examination doors, except those of the mathematical sciences. It was a kind of 'benefit of clergy' which conferred many privileges upon scholars; for without it a candidate was condemned to the utmost rigour of the secular arm of the examiner. Whatever the subject of his examination, the candidate with literary ability could cleverly skate over thin ice, veiling his ignorance, however colossal, and making the most of his slender stock of knowledge. But just because English composition constituted nine points of the game, a conscientious examiner who desired to test the candidate's knowledge of a subject and not his literary ingenuity, found, and still finds, an answer of the type of an essay very hard to mark. The careful estimates of experienced teachers are found to vary widely; nobody really knows what the answer is worth.

Under these conditions it is not surprising that even the 'old' examination commonly included a question of the precise, factual, what-and-where-are-the-following type. Thereto an answer was either right or wrong; an objective standard was possible; any number of competent examiners would arrive at the same mark. There resulted great economy of mental effort on the part of the examiner, since the answers of candidates could be marked almost and in some cases quite mechanically. The precise, factual type of question grew in favour. But it was gradually found that questions involving precise answers may take a wide variety of forms. In their search for tests of ability rather than of knowledge, psychologists have perfected many such forms, beginning with the 'completion' test of Ebbinghaus, in which missing words are supplied in order to complete the sense and language of a passage. On the whole the precise tests are much easier to mark, although harder to set than those of the descriptive or expository type.

For several reasons, however, the 'new' type of examination has failed to oust the 'old'. There is a tendency to combine questions of the 'new' and of the 'old' type in one paper, which in a measure was always done, except that the 'new' questions, once so few, diffident and apologetic in their public appearances, have now begun to rear their hydra heads in confidence and pride. That in spite of the certainty and ease with which the 'new' questions have invested the process of examination, the 'old' or 'essay' question still holds an honoured place, is due to a misgiving on the part of examiners that the 'new' questions may test scraps and snippets of knowledge, not consecutive thinking, without which the amplest erudition remains valueless. Quite possibly the 'new' examination may surmount this last hurdle by perfecting the technique of its stride. For example, the writer has experimented with a type of question in which a generalization is given, and a particular example demanded. It is doubtful whether any better kind of test of efficient thinking can be devised than one which requires the candidate to apply his ideas in concrete form. No doubt this type of question will be found more useful with advanced than with elementary pupils; but it is capable of adaptation to the level of the latter. The following paper was set by the writer to students in training to be teachers:

Give one illustration (the best that you can find) from school conditions, of each of the following propositions. Illustrations should be as particular, definite and concrete as possible, and no illustration should extend to more than five lines.

1. In behaviouristic psychology, the individual is simply the battle-ground.
2. Unless ideas correspond to a genuine need of the child, they are only potential stimuli.
3. Instinctive behaviour must invoke a tendency towards action of a specific kind.
4. A principle of great importance in education is sublimation.

5. Education arouses a child's curiosity in order to satisfy it later.
6. Instincts should never be unreasonably thwarted.
7. All thought is ideo-motor.
8. Sometimes a bully may be reformed almost in a single night.
9. Some children display contra-suggestibility.
10. Games offer a healthy means of expression to the social instincts.
11. Perceptual experience is the ally of general thinking.
12. Thought speeds up under catastrophic conditions.
13. Habits tend to crystallize into institutional form.
14. Certain bodily processes underlie those of the mind.
15. Children's minds respond readily to sense-stimulation.
16. Things are associated by co-presentation in consciousness.
17. Critical situations evoke mental strain.
18. A child may become obsessed with a fixed idea.
19. Intensity or vividness favours the process of association.
20. To forget well is a valuable art.

Varieties of 'Old' Examination Questions

It may be helpful to the teacher to consider various forms which examination questions may take, although by no possibility could a list of such forms be so compiled as to exclude modifications or additions. Apart from mathematical types, the older forms include:

1. *The Essay*: Example—'Write a short account of the social changes which were introduced into England by the Industrial Revolution.' (Hard to mark, and favours literary ability.)
2. *General Information*: Example—'Write short notes on the following:—Metric system, villeinage, Michelangelo, Belfast, Paradise Lost.' (Sporadic, disdainful of continuity.)
3. *Name and Location*: Example—'What and where are the following:—Tunis, Land's End, Andes, Dijon,

Gobi.' (Also sporadic, but easy to mark, and loosely unified by an underlying geographical concept.)

4. *Comparison*: Example—'Compare the Alpine system of mountains with the Himalayan.'
5. *Cause and Effect*: Example—'Explain, with the aid of a diagram, how an artesian basin is formed.'
6. *Criticism*: Example—'Malvolio, with all his estimable qualities, is the grand butt of the piece. How does he come to be so?'
7. *Summary*: Example—'Sum up the ecclesiastical changes that took place during the reign of Henry VIII.'
8. *Definition*: Example—'Define peninsula, volcano, watershed.'
9. *Enumeration*: Example—'What were the main provisions of Magna Charta?'
10. *Illustration*: Example—'How are seeds dispersed? Give one illustration of each form of dispersion.'

It would take a bold man to assert that any one of these 'old' forms of question should be wholly and permanently removed from the examiner's file. In some quarters there has been an exaggerated tendency to disparage the merits of the old questions, and to belittle their variety, in order to extol the new. Yet it is clear that of the list given only types 3 and 9 can be marked with mechanical accuracy, while of the others all except types 8 and 10 are so hard to mark that not only would different examiners vary widely in their estimate of the answers, but even the same examiner marking the same papers on different occasions would find it impossible to be consistent in his estimates. There is at least a strong case for introducing a proportion of 'new' questions, the answers to which can be easily and definitely marked. Perhaps all questions might be of the new type, were it not considered that what they test is something different from what the 'old' questions tested. There is a suspicion that the 'new' questions place a premium on memory, as the 'old' questions did on power of expression; and that of the two, power

of expression is better worthy of emphasis. But some of the 'new' questions, as will be seen from the following summary, are capable of exercising the higher mental powers as well as the more mechanical functions of rote learning. Moreover, they have the great advantage that, since they call for very brief answers, they can be so numerous as to admit of adequate 'sampling'; that is to say, the knowledge and ideas of an examinee can be touched at a large number of points, instead of at a few.

Varieties of 'New' Examination Questions

Although many of the varieties of 'new' examination questions were devised originally to test mental ability rather than scholastic attainment, they can readily be applied to the latter purpose. Indeed, it will appear upon reflection that in every test of ability a certain degree of attainment must be presumed, if it were only that of speech or of writing. It is impracticable to separate ability from attainment altogether. The following list of 'new' types of question is intended to be no more exhaustive than that of 'old' types already given; but this list may be helpful to the teacher who desires to set his examinations upon the 'new' lines. Varieties of new-type question include:

1. *Completion*: Example—'Fill in each of the blanks in the following sentence by an appropriate word: "Cromwell found it easier to defeat an _____ than to rule a _____."' "
2. *Alternatives*: Example—'Martin Luther was a rebellious (a) bishop, (b) presbyter, (c) monk, (d) statesman.' Strike out the three wrong answers.
3. *Synonyms*: Example—'*Ardent* means (a) fierce, (b) clever, (c) eager, (d) wicked.' Strike out the three wrong answers.
4. *Opposites*: Example—'The opposite of mean is kindly, generous, benevolent, careless.' Strike out the three wrong answers.

5. *Analogies*: Example—'Gold is to *metal* as oxygen is to . . . ?'
6. *Classifications*: Example—Underline the word which belongs to a different class from the others in: Breeze, cloud, wind, hurricane.
7. *Absurdities*: Example—What is absurd in the following passage?
"He stood on the bridge at midnight,
The clock was striking two;
He had so many things in mind
He wondered what to do."
8. *Reasoning*: Example—'If John is bigger than Tom and Frank is smaller than John, is Tom bigger than Frank?' Underline true, false, or uncertain.
9. *Number Series*: Example—Write the next two numbers of the series: 1, 2, 4, 8, 16.
10. *Arrangement*: Example—Arrange the following words in their proper order: 'Man, birth, child, baby, youth.'

Several other varieties of *new* tests (true-false, etc.) have been devised. The merits of problems of this kind can only be appreciated when it is remembered that not one but a number of questions of any given kind would have to be answered by an examinee. Questions which invite guesswork, such as those which ask merely whether a statement is true or false, are less satisfactory than those which admit of four or more answers. Questions such as 'absurdity' tests may be so expressed as to call for an answer that is easy to mark. In the example given above, the direction may be given to underline the two words which contradict one another.

Tests of Ability

That the 'new' tests are not only tests of memory will be clear from the examples which have been given. On the contrary, so closely are they related to general ability and educable capacity that these qualities may be measured by their means with a considerable degree of success. Accordingly, many teachers now find it advisable to apply some

form of group test of general ability to their classes in order to gain an approximate idea, not of the attainments, but of the abilities of each pupil. Sometimes the Binet-Simon tests are employed for this purpose, but these must be applied individually. This takes a long time, and some expertness on the part of the tester is required if satisfactory results are to be attained. Accordingly, it frequently happens that group tests along the lines of the 'new' examination are preferred to individual tests of the Binet type. It is certain that examinations of the 'new' type give more accurate results than those of the 'old'. Moreover, in so far as they test ability, they test something that has permanence. General ability, or educable capacity, is a more constant quantity than attainment, so that a bright pupil having been promoted two classes, though he commence at the bottom of his new class, within three months may find himself at the top of it. Hence many teachers prefer to ascertain how bright a child is rather than what he knows.

With a view to determining abilities in sense-perception and in motor activity of different kinds, many ingenious tests have been devised, most of which belong to the field of pure psychology rather than to that of education. But such tests as matching colours, or tapping, may be applied by teachers in such a way as to throw light upon the æsthetic and motor abilities of their pupils. A number of such tests may be helpful to the psychologist who is endeavouring to ascertain the vocational aptitudes of pupils about to leave school. Yet in this direction the results of tests should be accepted with caution, especially as the general tendency is for those who excel in one direction to excel also in another. Pupils who are good at reasoning are likely to be better at motor activities than those who are poor logicians; and the boy who would make a good carpenter would very likely make a good barrister also. But used with discretion, and linked with other evidence, tests both of general and special abilities cannot fail to help the teacher to adapt his instruction to the needs and capacities of individual pupils.

CHAPTER XVII

ENGLISH

Teaching Linguistic Expression

MORE than any other art, language is the foundation of civilization. Since the child comes to school to be systematically civilized, English, for all English-speaking countries, becomes the main subject of the primary curriculum. Therefore, it behoves the teacher of this subject to recognize several purposes which, although subsidiary to the main purpose, expression, and to its correlative, comprehension, are of high value in their own right. The children are not only to speak, but to speak well, both as to grammar and as to pronunciation. They must enlarge their vocabulary. They should learn, as far as their mental age permits, to think clearly; this is essential to clarity of expression. They should be aided to gain confidence in their own expressive powers. The essentials of linguistic expression, words, phrases, sentences, and the ideas which these represent, must be fixed by repetition until their position in the realm of involuntary habit has been consolidated.

The teacher's speech is the pupil's model. It should be marked by simplicity, accuracy, variety and vividness. Difficulty arises as to when to correct the children's faults. In practice, it is impossible to correct every error without destroying continuity of thought; hence minor lapses should be tolerated until major defects have been supplied. But ungrammatical utterance, nasal speech and unpleasant sounds are intolerable. Hence correct forms must be accentuated, though with a care to avoid affectation. Clear, grammatical, concise, unhesitating speech should become the goal of the pupil's endeavour; it is the outward sign of an inward logical grace, and develops *pari passu* with rational thought by means of selective imitation and practice.

How Expression is Encouraged

The teacher is nearly extinct who expected his pupils to sit still, fold their arms behind their backs, and wait upon the words that dropped like manna from his mouth. In English, expression ought never to lag far behind impression. Hence the teacher of the subject should adopt a sympathetic manner and cherish a tolerant habit of mind. To indifferent efforts he must lend a patient ear. For himself, as well as for members of his class, the burden of so doing may be lightened by the adoption of appropriate means to encourage a genuine desire on the part of the pupils to express themselves adequately. He may induce them to converse with him on terms of equality regarding sport and other topics. He may tell part of a story, and call upon members of the class to complete it. He may invite lectur-ettes from pupils upon their pet hobbies. He may even promote debates upon live questions. He may set the class a problem, the solution of which involves discussion; for example, a ship with no person on board is found off the west coast of Africa. He may write clumsy and involved sentences upon the board, and invite the pupils to suggest emendations. He may institute mock elections. He may call upon pupils to tell the stories which they associate with characters shown in pictures. 'This picture shows the meeting of the three fisher-wives with a beggar; tell the story of each.' For some children, the easiest path to speaking aloud is reading aloud. To these means of encouraging expression should be added skilful questioning, dramatization and written composition.

It is with young children that the greatest difficulty arises. To their natural timidity and shyness the teacher must skilfully oppose their equally natural eagerness to express what interests them and to inquire into the things that surround them. Early in the morning the teacher of a class of infants may encourage them to talk about the events of the previous day, or upon what they have observed on their way to school.

After week-ends and vacations, such conversation may be more protracted than at other times. Thus impression is related to expression, initiative encouraged, spontaneity safeguarded, and progressive improvement in linguistic power facilitated.

Talks on Pictures

Since oral must precede written composition, the teacher does well to provide materials about which the children may continuously converse. Among those which have been indicated above, pictures and blackboard sketches should occupy an honoured place. Erasmus describes a Latin 'picture talk', in the course of which the pupils see and discuss a combat between an elephant and a dragon. Pictures selected as topics for conversation should be carefully chosen with a view to the stimulus which they may be expected to give to free and natural conversation. The spontaneity of answers should not be sacrificed ruthlessly to considerations of grammatical construction and pronunciation. Almost any picture may be made to appeal to infants whose tastes have not yet been differentiated, but those which display colour and suggest action are best. With older pupils the difficulty of selecting a picture which appeals equally to all is much greater. Yet a universal appeal is necessary if all are to take a reasonable share in the talk.

Most children can enumerate objects shown in pictures, many can describe them, but few can interpret their significance without the help of leading questions on the part of the teacher. It has been well said that 'the main factors in securing intelligent interpretation are to absorb the meaning and sentiment, to supply the imaginary conversations, to dramatize the incidents and situations, and to retell the story in reasonably correct language.'

A chart with two pictures upon it, one showing a station homestead and another a mob of cattle being driven across the Ord River, was hung for three days on the wall of a classroom, the pupils having received instructions to study

the chart at their leisure. On the fourth day the pictures became the theme of a talk. Names were attributed to the station-owner or 'squatter' and to each of the drovers. The pupils were led to supply a conversation between the squatter and the foreman-drover relating to the sale of the cattle. They also described the fording of the Ord River and supplied the conversation held on that occasion by the drovers, the slight element of risk which may seem to have been involved in this procedure being offset by the simplicity of childhood.

According to one syllabus, 'Co-operative work between teacher and class in the making of poster, frieze and black-board illustrations of interesting items of the class activity is the most stimulating and productive form of picture talk. The picture which grows, as it were, under the eyes of the children, and embodies their suggestions and comments, stimulates their expectation, and utilizes their hand-work, is of the utmost value and delight to them, and the most provocative of good verbal expression.'

Speech Training as Play

Speech training should begin in the infants' classes, but the teacher is under the necessity of presenting it as play. Each individual sound should be taught apart from the words in which it occurs. After the sounds are known, however, they should be applied at first in words and finally in sentences. The following demonstration, arranged for the benefit of students in training, illustrates the whole procedure:

The children entered the room to the tune of a march played on the piano. They marched round the circle several times, halted, and turned to face the teacher in the centre of the ring.

First came the breathing exercise. This was introduced as a game and competition. The pupils were invited to imitate 'puffing billies' by making the sound 'sh' and blowing

hard three times. Each child tried to blow harder than the other. The next sound to be practised also utilized the 'puffing billy' motif. This was the sound 'oo', made as the locomotive was approaching a town. Then a big 'sh' was uttered, signifying that 'puffing billy' had finished his work for the day. During the 'puffing billy' game the children may walk around the circle.

The breathing exercises having been completed, practice in making sounds follows. The first sound to be taken is 'aa', made 'with a big mouth'. The teacher tells the children to 'make it cry' and 'make it happy'. Then the sounds *ō*, *ō*, *oo*, are made with a smaller mouth. During the time that the children are occupied in making the sounds *aa*, *ā*, *ō*, *ō*, *oo*, they take one step towards the centre of the ring for each decrease in the size of the mouth. The sounds that big father bear (*m-aa*), mother bear (*m-oo*) and baby bear (*m-ee*) make are imitated by the children. The 'm' is prefixed in order to ensure that the mouth shall be closed after the preceding sound.

After most of the pure sounds have been dealt with, a few rhymes are recited in unison by the children. The rhymes are selected for predominant sounds such as *aa*, *oo*, *o*. Each time they utter one of these sounds the children raise their hands.

The mouth is compared to a sound factory. 'T' is the baby tapper; 'D' the big brother tapper; 'R' is the bell above the door. Towards the end of the period comes rhythmic interpretation. The children play such games as 'Old King Cole', 'Ding Dong Dell', 'Hot Cross Buns' and 'Tommy Tadpole'. These games provide a combination of action with sound.

The whole of the lesson has been made interesting by the method of play. In the upper classes equal interest may be evoked by means of dramatization. But dramatization is more a method of practice and correction than of learning, because the pupils who take part in it must be presumed to know all the sounds already.

Correction of Errors in Children's Speech

The commonest faults in the speech of children are such as nasality, inaudibility, drawling and ungrammatical form. Delivery, grammar, pronunciation, completeness of expression, and the use of words in their proper significance, should be subjected to explicit diagnosis and treatment. The teacher's own speech will be imitated; but so, unfortunately, will be the speech of others who may be less qualified to provide worthy models. Hence pupils must be put on their guard against incorrect form and usage. A pitch of voice that is too high or too low may be corrected and modulated. Stammering, if due to nervousness, may be gradually cured; if physical in origin, it lies almost outside the teacher's province.

The Beginnings of Reading

Reading is the chief source of knowledge. Although the most useful of all the elementary arts, it is so little esteemed that poor readers are to be found even in the most highly intellectual professions. While educated people are generally able to acquire the sense of a passage by silent reading, they frequently appear at a disadvantage when required to read aloud, while the uneducated find it difficult to read either aloud or silently. The ideas, phraseology and vocabulary of children when they come to school—inaccurate and limited though they may be—furnish the material from which the teacher hopes to create good readers, and this he can do wherever he is fortunate enough to find a sufficient degree of native ability. He should take a careful inventory of his own equipment for the task, employing words within the comprehension of the pupils, studying the elements which together constitute the process of reading, mastering the correct position of the lips and tongue for making each sound, putting on patience like a corselet, and practising his own oral reading with diligence and care.

Little reading should be expected of the average child of six. At this stage no books are necessary; in their stead

models of letters are employed, or blocks on which the letters appear. By the use of such models, blocks, or similar aids, the children soon associate the sound of a letter with its symbol. They may build up simple words in play. Quintilian recommended ivory letters for children to play with, but the march of civilization has replaced ivory with cardboard. The main thing is that many of the exercises should be of a motor character.

The child of seven is ready to replace blocks with simple primers. Easy phonetic words related to his home and school interests are applied in simple sentences. The teacher writes 'Shut the door' on the blackboard; when the pupil has read it he is permitted to perform the appropriate action. He enjoys reading simple narrative; for example, the writer in his early childhood used to delight in reading at home a simplified version of the *Swiss Family Robinson*, ingeniously arranged in words of four letters, although some of these were less familiar to his experience than longer ones would have been. At this stage a definite connection should be established between the child's spoken language and the new, visible language which he is attempting to learn. The desire for reading should be thoroughly awakened, help should be given towards the mastery of difficulties, and material should be supplied for free reading. Fluency and expressiveness should be attained in the reading of some primer, and the range of the child's ideas should be extended. Words representative of some subject or idea should now be readily recognized, spans of several words should be grasped as a whole, not merely *seriatim*, and the processes of imitation, repetition and the writing of words should be freely employed.

Methods of Teaching Reading

Apart from specialized systems, four standard methods have been applied to the teaching of reading. Under the *alphabetic* method, children began by learning the letters of the alphabet. Then they spelled written or printed words orally and afterwards pronounced them. But experiment

indicates that words are best learned in the first place as wholes, and afterwards as combinations of letters, an order which reverses that of the alphabetic method. Moreover, in English so many sounds are given to letters that the pronunciation of a word cannot safely be inferred from a knowledge of the letters of which it is composed. The *phonic* method prefers to associate each letter with its characteristic sound and to combine the sounds which the letters represent into words. Two difficulties remain: firstly, that one letter may have several sounds, and secondly, that words are not envisaged as wholes. Under the *phonetic* method, however, a separate symbol is invented for every possible sound in the language. This method requires forty-five symbols instead of the alphabetic twenty-six. The parts are still treated prior to the whole, and the increased number of symbols involves the importation of arbitrary difficulties into the process of learning. Moreover, like phonics, phonetics proceeds from the more abstract to the more concrete, a principle in itself undesirable and opposed to the natural order of learning. There remains the *look-and-say* method, according to which words are recognized at first as wholes. The child looks at a word and repeats it at sight. Phonic analysis follows. Although irregular words, such as 'yacht', 'trough' and 'seize', may best be learned in this way, the majority of teachers prefer to combine various elements of each of the standard methods at their own discretion.

The fact is that the desire to read is more important than the technical method by which reading may be taught. When a certain child was five years old, the only letter that he knew was 'o'. His father suggested that it was time that he learned to read. 'Your mother,' he said, 'is going to the city for a month; would it not be splendid if, when she returns, she should have the pleasure of seeing you reading a book?' The flattered infant considered the idea an excellent one. His father taught him in the evenings, and at the end of the month the child could read the simple primer. He took little notice of his mother's return, although dying to do so.

Believing that her great pleasure would be to see him read, he sat in a corner and buried his face in the book, a course hardly fair to a fond mother just returned from a prolonged absence. But the point is that if a child desires to read, he will learn to do so in little time by whatever method may present itself.

It is only too easy to over-estimate the young child's ability to recognize and to pronounce any but the simplest of words. At all stages the assimilation of meaning is vital; hence there should be much reading of very easy material. The subject-matter should be interesting to children. As soon as possible, carefully-selected passages of verse should be read before the class.

Children of about eight may read fairy tales, fables, folk-stories, legends, poetry, tales of adventure at home and abroad, together with an occasional homely story of domestic life. Subject matter is to be mastered through silent reading; formal difficulties through oral practice. In order that sufficient time may be spent by each pupil in oral reading, a class may be divided into groups for this purpose, a good reader serving as monitor to each group. The groups may meet in corridors, in the playground or wherever a convenient nook can be discovered.

Many children seem to have the idea that the quicker they can read the better readers they are. As one teacher remarked to the writer: 'They begin each sentence with gusto and end in a whisper, the result being somewhat similar to the noise made by deflating a toy balloon equipped with a squeaker—very loud and strong at first, but anæmic towards the end. Their voices also seem just as incapable of modulation as the unregulated squeak of the balloon.' Sometimes pupils race through the text in a monotone, giving little or no attention to pause-marks. They must be taught that quick reading is not good reading, neither is the mere correct pronunciation of words. Rapidity and tunefulness are incompatible; but compel a child to read slowly, and he is almost forced to modulate the pitch of his voice.

Some children appear to read to themselves; their utterance is indistinct and inaudible. Instead of standing nearer, the teacher should stand farther from these. Others read too loudly, with a harsh result. One of the teacher's greatest difficulties is to know when to correct a child's mispronunciation. Immediate correction of an error distracts attention from the sense of the passage, but frequently it becomes necessary, or harm may be done to the rest of the class. An apt illustration may be selected from the writer's experience in the training of teachers. A student-teacher remarked: 'The pupil must be conversant with the pronunciation of every word he uses.' As he mispronounced *conversant*, the statement fell somewhat flat. It seemed better to correct him immediately; otherwise the remainder of the class would have assumed the accent to lie where he had placed it; moreover, by the end of the hour the lecturer might have forgotten to comment upon the incident.

Young children will frequently misread one word for another. In time this fault tends to disappear, as a span of about four words comes to be recognized by good readers at one fixation of the eye. At the teacher's discretion, pupils may be encouraged to correct one another's mistakes.

The Teaching of Writing

The origin of the art of writing is to be found in drawing, a process used by many primitive tribes for the record and communication of ideas. This art, with its correlative reading, is the foundation of school experience, since wherever the art of writing is known there are to be found permanent schools. Following the phylo-genetic order, young children commonly draw before they can write. In order to perform the latter art, they must master two things: the use of an implement and the forms of the letters. The use of the pencil may be learned partly in drawing, partly in free-arm movements, in imitation of the teacher. Montessori would permit children to outline shapes and fill them in with coloured pencils. A device mentioned by Quintilian is that

of tracing with a stylus the grooves which have been cut out on a board in the form of letters or words. There seems to be a place for this device, intermediate between tracing the forms of letters in the air and writing upon the blackboard or paper. The development of the necessary muscular and nervous co-ordination may thus be facilitated.

As to the forms of letters, they may be traced by children of six with the finger in sand, or drawn with coloured chalks upon a board. Letters cut out in cardboard may be taken from a box and matched or pieced together so as to form words, until, as Montessori found, the children 'explode' spontaneously into writing. Letters cut out in sandpaper are traced blindfold with the fingers and thus identified. This exercise may be turned into a game. Cards with letter-forms pasted on them are given to the children, who identify as many as they can. Competition supplies a strong motive for learning the shapes. Subsequently both letters and words are drawn from memory, and when sounds have been learned the symbols of these sounds are given to the children to write.

At about seven years, the children are allotted books and pencils, the books being ruled with double guide-lines to keep the letters uniform and to ensure correctness of height. The time will come when one line alone may serve, and ultimately even this may be discarded, although to keep handwriting straight without lines is at first extremely difficult. Letters are treated both individually and in related groups, such as m, n, w, v. The letters are traced in the air or with the finger on the desk before being committed to paper. For his part the teacher demonstrates the formation of letters on the blackboard, and checks each effort of the pupils in order to avoid the fixation of bad habits. Self-criticism is practised, but there should be no discouragement of pupils, which militates against success. As they advance in skill, pupils begin to make fair copies of their compositions and to reproduce poems and rhymes. Pen and ink are introduced in a similar manner, and exercises given in the use of capitals

and marks of punctuation. Map lettering is introduced at a later stage. In the upper classes of the primary school, practice in speed is provided, groups of 'u's', 'e's' or 'm's' being written with a fast hand-movement. A specified time is allowed for writing a given group of letters, the time being gradually reduced, and care being taken that the form shall not be permitted to become a scrawl. Punctuation should be regarded as an essential part of the writing lesson.

A uniform type of writing should be adopted for the school as a whole, and possibly for a system of schools, since it cannot be assumed that a pupil will live all his scholastic life in the immediate locality. Cards bearing specimens of writing are sometimes placed in the hands of children to assist them to correct their own mistakes. But to insist on good writing only in the writing-lesson is the most common origin of indifferent results; for in all work-books, and especially in those used for home-work, and for dictation and composition, good writing should form part of the pupil's and the teacher's aim.

The Teaching of Spelling

Correct spelling depends upon the possession of a clear mental image of the word, although that image may be either visual or auditory. Most people have both a visual and an auditory image of the constitution of a word. It may even happen that motor adjustments have been so perfected that a word is reproduced partly by 'muscular memory', as a stroke is produced in golf or tennis. Yet while it may be true that some pupils best retain visual and others auditory imagery, in class teaching it has to be assumed that one type of imagery reinforces the other. Hence the component parts of a word should be seen, heard, uttered and written. At the same time, the caution is necessary that spelling should not be taught in isolation from pronunciation and meaning.

Spelling is learned most effectively when the laws of association are respected. Similarities should be seized, contrasts emphasized, critical difficulties concentrated upon. The

art of selecting the real difficulty in the spelling of such a word as 'yacht' or 'seize' can only be mastered gradually by the learner, but is easy to the teacher. Hence good spelling depends in a high degree upon good teaching; it is not merely a matter of the will to spell, or of extensive and varied reading. Yet gradually, from the combination of many sense-images, a kind of 'spelling conscience' emerges which enables the pupil to cope with his own difficulties.

Good oral spelling cannot be expected unless care is taken with the pronunciation of words. Syllables and accents should be enunciated with discrimination, new words compared with old, and diacritical marks introduced, as in dictionaries, wherever the necessity arises. Pronunciation is highly imitative; a good model set before the pupils assists them greatly both to pronounce and to spell correctly.

From a dreary and uninteresting period, the spelling lesson may be transformed into a popular, lively and stimulating occasion by the introduction of suitable devices, most of them competitive in character. Preparation for competitions is often more important than the competitions themselves. Hence the fact that a 'spelling game' is to be played should be known in advance. Sometimes pupils may make their own dictionaries. Each pupil is supplied with a book, the tops of pages being marked with the letters *a* to *z*. Words with which the pupil finds difficulty are written on the appropriate page. Or lists of words may be shown which the pupils are to enter in their dictionaries in alphabetic order. The latter device should be employed sparingly, as valuable time may be wasted in effecting the right arrangement of the words.

With young children an excellent device is to supply each with a single cardboard letter. When a word is spelled the children who hold its component letters stand up. They advance to the front of the class and display the letters so as to spell the word. This plan is suitable only in the early stages of spelling, when time is less important than vividness, and when long words have not to be learned.

The most popular and universal form of spelling contest, however, is the 'bee', in which sides are chosen, the members of which ask each other alternately the spelling of words until the whole of one side has been defeated. It is better in every way that the field of selection of such words should be limited—for example, to a certain number of pages of the reading-book used by the class. Sometimes misspelled words are referred to captains, who are replaced by others if they should fail. Inter-class competitions of this kind arouse great interest, especially when, as happens in large schools, it is possible to match two classes which do not lie far apart in point of attainments. The defects of the typical spelling 'bee' are that the words are heard but not seen, and that too much of the work may devolve upon the best spellers.

Again, young children may each be given a complete supply of letters. The teacher pronounces a word, and the pupils race to see who can build it most quickly on their desks. All who fail must make the correct arrangement of letters before the teacher passes on to the next word.

In older classes, hard words should be entered by each pupil in a book of his own keeping, whether alphabetically indexed or no. It interests pupils to be asked to write as many compounds of a given word as they can in a given time, thus: *press—pressing, pressed, compress, impress, repress, suppress, express*, etc. The plan of making as many words as possible from the letters of a given word, such as *rhinoceros* (*in, horse*, etc.), using each letter only once, is sometimes employed in 'parlour' games, but has little to recommend it unless the teacher wishes to keep some children employed while he is himself occupied with others, as not infrequently happens in a small school.

A 'cricket match' may be played by spelling. Each pupil 'bowls' an 'over' of a certain number of questions, and counts the 'wickets' that he takes. According to local requirements, the analogy of baseball may be substituted for that of cricket. But, like the 'spelling bee', the 'cricket match' fails to provide for visualization. The following plan is free from this

defect, the seriousness of which is apparent from the fact that one often has to write down a word to see if the spelling 'looks right'. A leader is appointed to dictate words. The pupil whom he calls upon writes the word on the board. The class corrects the lists thus made, and a score-keeper records the points. Incorrect spellings are set right, and from time to time the leader is changed. Some children delight in propounding difficult words, about the spelling of some of which even the teacher may be doubtful. Only in advanced classes can this propensity be indulged; in general, the work must be kept within the pupils' range. Hence definite limits to the choice of words by pupils should be prescribed. Incidentally, such provision will greatly facilitate the proper preparation of work.

In addition to the lists of errors in spelling which should be kept by pupils, the teacher should make a record for his own use, from which periodical tests may be given. Yet testing is not teaching. The main thing in teaching spelling is to encourage reading and to provide incentives and opportunities for self-drill in this difficult and elusive art.

Dramatization

Now that the propensities of childhood are considered to be as worthy of study as the things that children are taught, a device like dramatization, in which learning is turned to play, begins to attract increased attention. The great advantage of dramatization as an educational *organon* or instrument is that it appeals to older as much as to younger pupils, except that with older pupils greater preparation is necessary in order that the play may satisfy their growing critical faculties. Dramatization implies 'make-believe', and make-believe or conscious imitation is one of the principal forms which the play instinct takes, the others being a sheer ebullition of energy, and a natural preparation for the future activities of the race.

It is not merely that dramatization begets self-confidence and great facility in self-expression; it is also a powerful

incentive to learning. In order to enact a literary or an historical episode, pupils will go to great pains not only to understand the subject-matter itself, but also to become acquainted with the customs, the dress and the characters of the period. They are barely conscious that this is work—to them it is part of the fun.

Dramatization may be either improvised or prepared. On the spur of the moment children are ready to enact the defence of the bridge by Horatius; but the trial of Charles I cannot be represented without suitable preparation of the setting, the incidents, the words, and the staging.

Not only may the story of a poem or of a passage in prose be dramatized, but movements may be suited to the rhythm of verse, and the explanation of new ideas may be presented in terms of action. For example, a teacher wished to explain the meaning of an auxiliary verb. One boy stood forth to represent the auxiliary, and others with the names of participles came and leaned upon him. Again, one child bearing the legend 'seen' came and leaned against a table, while another with 'saw' stood upright and alone. Then 'is', 'have', etc., came out, and 'seen' leaned against each in turn. The teacher will be able to extend such employments of dramatization at will.

Imaginative work in composition may be facilitated by dramatic practice. Children soon learn to impersonate any character they like, and even to speak and to write in that character. But some notice may be taken of the wise suggestion of Plato, that if children imitate anything, it should be what is good and noble, not what is beneath their intelligence and their aspirations. This is not to assume that the repeated imitation of an unworthy model makes one's own character base; for the children are conscious that they are merely actors. But the good and the noble demand higher powers of expression than the ignominious and the futile; and the simple dignity of a serious drama is better for children's English than the trivialities of a farce.

Courteous Address

In the opinion of John Locke, learning is of less account, at least in the education of a gentleman, than character, wisdom and courtesy. In the infants' school or infants' class, where time is ample and 'forcing the pace' must be deprecated, special lessons should be given in courteous address. How such lessons may be conducted is illustrated in the following literal record of the procedure adopted in a certain kindergarten. The children were seated in a double circle, each facing the centre, to which an aisle was left opposite to the door of the room.

The visitor entered. The teacher said: 'Say "good morning" to Mr. Smith.'

Children (bowing): 'Good morning, Mr. Smith.'

Mr. Smith (bowing in return): 'Good morning, children.'

Scene I: A boy, with a cap on his head, meets a girl on her way to school.

Joan: 'Good morning, Jimmy.'

Jimmy: 'Good morning, Joan.'

Teacher: 'What should Jimmy have done?' Jimmy removes his cap.

Jimmy: 'Where are you going, Joan?'

Joan: 'I am going to school, Jimmy.'

Jimmy: 'May I walk with you, Joan?'

Joan: 'Yes, Jimmy.' (*Exeunt*).

Scene II: A boy meets a girl who has been shopping, and is laden with parcels.

Mary: 'Good morning, Billy.'

Billy: 'Good morning, Mary.' (Forgets to remove cap). Reminded by the teacher, Billy begins again, this time removing his cap.

Billy: 'Where have you been, Mary?'

Mary: 'I have been shopping, Billy.'

Billy: 'Are you going home, Mary?'

Mary: 'Yes, Billy.'

Billy: 'May I walk with you, Mary?'

Mary: 'Yes, Billy.'

Billy: 'May I carry your parcels, Mary?'

Mary: 'Yes, thank you, Billy.'

They come to the aisle. Billy is about to rush out before Mary, but the teacher stops him.

Scene III: A party.

A table is set in the centre of the circle. Patty is hostess, while Betty, Keith and Fred are the visitors.

Patty is alone in the centre of the circle.

Enter Betty.

Patty: 'Good morning, Betty.'

Betty: 'Good morning, Patty.'

Patty: 'Take a seat, Betty.'

Betty: 'Thank you, Patty.' (She sits down).

Enter Keith.

Patty: 'Good morning, Keith.'

Keith: 'Good morning, Patty.'

Patty: 'Take a seat, Keith.'

Keith: 'Thank you, Patty.' (He sits down).

Enter Fred by the door. He closes the door carefully.

Patty: 'Good morning, Fred.'

Fred: 'Good morning, Patty.'

Patty: 'Take a seat, Fred.'

Fred: 'Thank you, Patty.' (He sits down).

Patty: 'Would you like a glass of milk, Betty?'

Betty: 'Yes, thank you, Patty.'

She goes to the table. Keith rushes to pull Betty's chair out for her.

Patty: 'Would you like a glass of milk, Keith?'

Keith: 'Yes, thank you, Patty.'

He goes over to the table and sits down.

Patty: 'Would you like a glass of milk, Fred?'

Fred: 'Yes, thank you, Patty.'

He goes over to the table and is about to sit down.

Teacher: 'What do you think Fred should do now?'

Fred rushes over to help Patty with her chair. They eat.

Betty: 'I think I had better be going now, Patty.'

Patty: 'Good-bye, Betty.'

Betty: 'Good-bye, Patty.' (Exit.)

The boys appear to be loth to leave.

Teacher: 'Don't you think it is time you went?'

Keith: 'Good-bye, Patty.'

Patty: 'Good-bye, Keith.' (Exit.)

Meanwhile, Fred has quietly departed.

Scene IV: Teacher and Pupils.

Teacher: 'I will now ask a few questions.'

Teacher: 'Good morning, Tommy.'

Tommy: 'Good morning, Miss Jones.'

Then:

Teacher: 'How are you this morning, Joe?'

Joe: 'Not bad.'

Teacher: 'Try again. How are you this morning, Joe?'

Joe: 'Not bad, Miss Jones.'

Teacher: 'Try again. How are you this morning, Joe?'

Joe: 'Not bad, Miss Jones.'

Teacher: 'Somebody answer nicely. How are you this morning, Peggy?'

Peggy: 'I am quite well, thank you, Miss Jones. How are you?'

Teacher: 'I am quite well, thank you, Peggy.'

Teacher: 'Now, Joe. How are you this morning, Joe?'

Joe: 'I am quite well, thank you, Miss Jones.'

The teacher asks a few more children the same question. The children then march out, carrying their chairs in the proper manner.

Courteous address must be taught not only by such *ad hoc* lessons as this, but whenever the occasion arises throughout the child's experience at school. It is evident that definite lessons will do more than incidental instruction and correction to elevate good breeding to the rank of a childish ideal.

Completing Sentences

One form of English exercise frequently employed in primary classes consists in filling in blanks with missing words. By this means pupils may practise giving both sense and form to imperfect passages. The use of such forms as 'there' and 'their' may be tested and taught, verbs may have to be supplied so as to agree with their subjects, and many other grammatical principles may be illustrated. The completion exercise interests children, and provides one of the best single tests of their educational achievement, at least on the linguistic side. It promotes the association of ideas and assists coherent thinking. Both the written composition and the conversation of the pupils are likely to derive benefit from completion exercises conducted under a fire of friendly criticism.

Telling Stories to Children

While the general procedure of a narrative lesson has already been analysed, it may be well to indicate at this point some of the detailed requirements of successful story-telling. The class should be grouped closely so that all can hear the teacher readily even when he is speaking in a low tone. Loudness of voice is a mistake. The story should not be committed to memory; but its beauties of thought and expression must be retained; hence critical passages, especially the words attributed to the characters, should be given literally in standard form. Morals need not be elicited; but at the right moment a wave of social feeling should permeate the class. Both the matter of the story and the manner of telling should be simple, since the sense must be made clear by a single presentation of the narrative. Enjoyment is a fundamental aim, for the children are laying the foundation of any literary taste which they may be able to develop in the future. Incidents must be told in the proper order. Epithets may be repeated, just as Homer refers constantly to the wise Ulysses, or the swift-footed Achilles. Vividness of presentation is necessary in order that the children's

imagination may be fully aroused. Pictorial illustrations may be presented at the appropriate time, generally after the story is told, when the pupils have been placed in a position to discuss an illustration with intelligence.

Adventurous and geographical stories are a means of interesting young children in other lands, and in their human and animal inhabitants. *The Swiss Family Robinson*, however faulty a work in some respects, is still a model of this type of narration. Children are interested in the biographies of explorers, the exploits of hunters, and the experience of pioneers. They like to hear tales that are told to children in foreign countries, and to learn games that are practised abroad. A touch of foreign national dress, introduced in dramatizing a geographical story, never fails to captivate interest. With a few deft changes, the child may be transformed, to his own satisfaction and to that of his classmates, into an Eskimo hunter, an Indian warrior or a South Sea Island fisherman.

Teaching Poetry to Young Children

The primary appeal of poetry to the young is through rhythm and narrative. Hence little stories, told in bright, quick metre, are suited to the infants' classes. Not only to these, but to higher classes, the teacher will read a number of poems to which he should recur from time to time, thus discovering which are most highly esteemed by his pupils. When it is desired that a certain poem should be memorized by the whole class, several good readers may be permitted to read it aloud, until the children have become so familiar with the language and ideas that the completion of the process of memorization is likely to require little effort.

The selection of poems to fulfil the needs of a class is never easy. Perhaps it is best to discover from the children themselves, after a number of poems have been read aloud to them, which they would like to read and to study, perhaps to learn, 'by heart'. The teacher may prefer, however, to be guided by the merits of poems rather than by the demand

for them. In this case he must remember that absolute merit is not the question, but only suitability to the needs of the class, and that the natural desires of the pupils must receive due consideration. Story, rhythm, language, intelligibility and outlook upon life are among the chief qualities to be weighed whenever poems for children are to be selected. It is perhaps to be regretted that there is no great epic in English literature comparable in its appeal to the interests of childhood with the *Iliad* and the *Odyssey*, which formed the staple of primary reading in the schools of Hellas. A long, narrative poem, capable of serial treatment, after the manner of the medieval romances of Reynard the Fox, but without their grossness of language and sentiment, would be a veritable boon to the childhood of the English race. Poetic literature should assist prose to open the doors of the infinite palace of ideas.

Children like to hear poems which illustrate pictures, historical incidents or other phenomena that have come within their experience. They regard such poems as beautifully-told stories, or as the words of songs. They are entitled to their own poetic likes or dislikes. They enjoy the admirable exercise of selecting a suitable name for a poem which they have for the first time heard. The teacher always sets a model by reciting or reading a poem; then the pupils may be permitted to say it with him, and subsequently after him, finally repeating it unaided. At the conclusion of such a treatment it is well for the teacher to recite the poem once more, in order that its beauty and significance may remain as the pupils' final thought. Dramatization of actions may be practised, but not so as to obscure the value of the lines, a danger which becomes serious whenever the value of dramatic gesticulation is exaggerated.

Connected Speech

It is not enough that children should talk; they must be able to talk with some degree of fluency. A beginning should be made with answers to questions. These should

take the form of a complete sentence, rather than of a mere phrase, although in this matter some discretion may be exercised, lest answers become stilted. To ask, 'Which is the most important of Australia's exports?' is to invite the answer, 'Wool', but to ask, 'In what way is South Africa a rival of Australia?', is to require an explanation that calls for connected speech. The value of re-telling stories as a means of providing for continuity of expression has already been indicated. 'Picture talks' may subserve the same end, each pupil being required to express the idea which the picture has suggested to him in a complete form. Written composition allows inadequate opportunity for connected expression, since the child can write only one thought in the same time wherein he could have given utterance to a number. Pupils may be encouraged to compose imaginary dialogues, such as may have been held between the persons represented in a picture or in a story. Health talks, excursions, lecturettes, debates and similar occupations of the school will be sure to provide many occasions for the development of fluent utterance. Minor faults may be temporarily indulged; but the child who continually harps upon a single phrase should be led to see the futility of his methods of self-expression.

Correction of Errors in Speech

Since the home, the companionship of playmates and the casual influences of the pupil's environment are competitors with the teacher in their influence upon speech, the correction of faults is no light obligation. Purity of speech may be unknown outside the school, slang or slipshod utterance may be the rule rather than the exception. For this reason the teacher cannot afford to indulge in base colloquialisms which will inevitably be accepted by the pupils as standard speech. Common errors may be noted while children are at play, to be treated in the next language lesson. Obscure ideas, poor vocabulary, imperfect utterance, are dragons to be attacked in the spirit of St. George. Children may be encouraged to

correct one another, but in a kindly way. Errors in English must be noticed in all lessons, whether the subject be linguistic or not—there must be no toleration for such jumbled expressions as 'must of' for 'must have', 'dunno' for 'don't know', 'jever' for 'did you ever'. Young children enjoy the pronunciation of phonetic sounds, especially when this exercise is supplemented by the repetition of appropriate jingles.

Greetings, Requests and Messages

Since education aims broadly at individual and social welfare, and since it represents a stage in life as well as a preparation for life, the school must accept some degree of responsibility for etiquette and polite formalities. These, however, should be such as are appropriate to the environment. Children should learn how to address companions and superiors, whether to ask a favour or to deliver a message. In the lower classes scenes may be enacted in which the pupil addresses one of his fellows, or the head master, and from time to time occasions will arise for instruction and drill in modes of behaviour and address. Correct forms of self-expression beget confidence, self-possession and power, and pave the way to letter-writing and other branches of literary activity. Children enjoy the idea of fitting themselves for a larger life.

Silent Reading

After leaving school the majority of pupils will read little orally, but much silently. In silent reading the principal object of the reader is to acquire information. Although experts differ as to the proportion of time that should be allotted in school to silent reading, all agree that more and longer periods should be devoted to this occupation as the pupil advances from lower to higher classes. Exercises in silent reading begin as soon as the child can read independently; and at this stage he should be supplied with supplementary readers, emphasis being placed upon his ability to master their contents, and thus to acquire ideas by his own efforts. The old practice of reading sentences in turn is a much less

useful exercise, for the silent reader has in his hand the key to all knowledge. Being in a position to form his own concepts and attitudes, he enlarges his units of thought and broadens the base of his judgments. He masters narratives and descriptions as a whole, which by the routine of oral reading he would have known only in disconnected fragments. He attains speed in recognizing phrases, extends his vocabulary and gains familiarity with good literature. The teacher, on his part, incites pupils to express what they have read, and is enabled to test their growing powers of apprehension and of appreciation.

Encouragement of Home Reading

After the gates of the school have closed upon an individual for the last time, it is chiefly by reading, supplemented by intercourse, that his education is enabled to preserve its continuity. The habit of reading at home should be encouraged in childhood, so that it may be well established before the termination of schooling. Fortunately, the child is a conscious and sentient 'mark of interrogation'. His curiosity may be aroused to the point at which he desires to satisfy his demands for knowledge from a book. A boy interested in moths was observed to pore over a volume with a puzzled air; it proved to be *Hints for Young Mothers*. But, having once determined to read up his subject, such a lad would soon discover the right volume for his purpose. In order to conform to the interests of childhood, books for the young, whether technical, scientific or literary, should be entertaining as well as instructive.

While it may not be desirable to promote contests to see which child has read the most books in a given time, it is certainly advisable for class teachers to recommend lists of books for home reading. Except for the brighter pupils, the books thus recommended may be easier than those which are read in class. When a number of copies of the same book are available to members of a class, the book may become the subject of a lesson, or even the foundation of a

play. One advantage of the Dalton plan is that by making children thoroughly familiar with books, the plan prepares them to take over their own education in the future. In order to complete their assignments, the pupils must assiduously read and study. Voluntary lectorettes may be given upon approved books; these, and especially the teacher's oral reading, may be utilized to stimulate the desire of the pupils to read. It is inadvisable to lay stress upon certain books that should not be read, since a taboo of this kind defeats its own end by arousing the contra-suggestibility from which originate so many of the difficulties of the teacher.

Certain supplementary readers should be placed in the hands of each member of the class in order to provide a common basis for discussion. Intellectual pleasures are increased by being shared. Meanwhile the essential thing is that the children should want to read the books, not feel that they have to do so. It is a mistake to have the whole book read orally in class, even though pauses may be introduced for purposes of explanation or discussion. There seems to be no reason why certain of the more dramatic passages should not be rendered orally by the teacher or by selected pupils. The teacher may read orally up to an especially stimulating part, leaving the pupils to read silently what follows. Historical, romantic, picturesque or realistic novels may be borrowed by pupils for perusal at home, nor should minor linguistic difficulties be sufficient to deter a child from achieving a general mastery of the sense.

Many systems of schools make provision for the free distribution of a magazine, which has the threefold advantage of introducing children to the field of periodical literature, acquainting them with up-to-date and topical material, and delighting them with a repeated experience of freshness which no ordinary text-book can yield. The magazine includes poetry and literary prose, as well as occasional lessons of the informative or utilitarian type. Local colour may be more readily introduced into the magazine whose entire circulation lies within a given district than into text-books

which are intended to be read throughout the whole country. Reading aloud, spelling, and drill in correct speech may be practised as well from the magazine as from a reading-book, or perhaps better, since to the children the topical articles in the magazine are intensely realistic.

Beginnings of Written Composition

A child expresses his ideas with far greater ease in speech than in writing. This is due mainly to the mechanical difficulties of the latter art; but partly to the fact that defects which in speech can be readily scamped, slurred, or remedied by facial expression or by gesticulation, become intolerable when embodied in a written form. Speech may be neither logical nor grammatical; writing must be both. And, although in this age of haste and telephones the full glory of the art of letter-writing tends to be sadly obscured, pupils must learn to write firstly to clarify their own ideas, and secondly to impart them to others.

It may be disconcerting to a teacher to find that a child who can talk fluently about his visit to the zoological gardens is unable to write a single satisfying sentence on the subject. Clearly, however, it is time to make a beginning with written composition when the pupil has mastered the technique of writing, and has learned the elements of sentence-forming. At first it may be impossible for him to force his young Pegasus to take an even stride. Before finishing one sentence he has begun the next. Several ideas will insist on blooming or buzzing in his mind at almost the same time, the art of expression lagging far behind. On the part of the teacher the main effort should be to secure sentences that are simple and complete; for the first essential in writing is clearness. Even formal writing-lessons should conclude with the transcription of a complete sentence. After the pupil has begun to write such sentences, he should still be encouraged to compose orally; he should realize, in fact, that he is committing to paper only a part of what he has composed.

Interest is the touchstone to success in composition. Only subjects of interest to the children should be written upon; and the pupils themselves may be consulted as to the selection of such subjects. For some time children should do no more than to narrate and to describe. An exercise which will interest a class is to describe various objects without mentioning names, so that the objects may be named by fellow-pupils as the result of the written description. In this way the ideals of brevity, clearness, vividness and realism in writing may be definitely but not obtrusively inculcated.

Life in the home and at school will suggest many suitable topics for elementary composition—games, toys, pets, coming to school, the garden. Other topics—animals, trees, fruit, flowers, rain—are likely to be suggested by the children's observation of nature. In addition, stories, poems and pictures will provide an endless store of suitable themes. Greater maturity is postulated by the treatment of current topics or of red-letter days in the school calendar.

A practising teacher has supplied the following useful suggestions for the teaching of sentence-weaving:

'All teachers find a difficulty in getting children to tell a story, or to relate an experience, without the tedious recurrence of "and", "so", or "then" as connectives. The best means of overcoming the difficulty is regular practice in sentence-weaving.'

The following is a typical exercise. Teachers will readily contrive any number of others; they may even be taken from faulty compositions:

'The man has a dog. The man loves his dog. The man never beats his dog. The man takes his dog with him when he goes out.'

Children will soon discover that this sounds unreal and absurd; that people, in fact, never talk in this fashion. The pupils reconstruct thus:

'The man has a dog. He loves it. He never beats it. He takes it with him when he goes out.'

They may go one step further and discover that all this may be said better in fewer words:

'The man loves his dog. He never beats, but takes it with him when he goes out.'

The teacher may ask the children to begin a sentence in another way, but to express the same ideas. He supplies the beginnings:—

(a) 'Because the man loves his dog.....'

(b) 'The man who loves his dog.....'

(c) 'The man never beats his dog.....'

The children are required to complete the sentences.

From simple exercises of this sort, children will proceed to more difficult sentence-weaving, involving the construction of a complex sentence from the combination of two or more simple sentences. For example:

Make the following sentences into one long sentence:

'Sir Douglas Haig was a great general.'

'He was the Commander-in-Chief of the British troops in France.'

'They won many victories.'

In exercises of this kind, punctuation should be carefully taught. Unpunctuated sentences should be distributed for punctuation, only the comma and the full-stop being used at first.

The Choice of Words

The same teacher has supplied the following suggestions for training children in the use of words:

Children should be taught to choose the right word for the right place. They readily learn to express shades of meaning, at the same time extending the range of their vocabulary.

'The sun *shone* brightly. It *blazed* in the sky at noon. The frost *sparkled* in the sunlight.'

Children will soon discover that it is better to say:

'The frost *sparkled*' than to say 'the frost *shone*' or 'the frost *glamed*.'

In order to demonstrate how important it is to use the right word, consider the following simple example:

'A boy ran down the road.' If there was nothing distinctive about his running, the choice of words is adequate. But if he ran extremely fast we might say that 'he tore' or even that 'he flashed' down the road.

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An interesting exercise for beginners in composition is the following. Write on the blackboard the sentence:

'The little boy talks.'

If instead of 'little boy' we write 'duck', what other change must we make? 'Quacks.' Similarly hens 'cackle', dogs 'bark', crows 'caw', horses 'neigh'. The children supply the appropriate verbs.

The following exercises are useful in building a vocabulary. Children should work them orally, the teacher assisting at the blackboard. Later a pupil may be asked to read his list. The rest of the class then supply other words from theirs, until they have as complete a list as possible. Every child then copies the list from the blackboard to be used as the basis of a connected composition.

Exercise I: Write down as many names of things as you can in

- (a) the railway station,
- (b) the farmyard,
- (c) the playground.

Exercise II: Write down as many words as you can, describing

- (a) trees,
- (b) flowers,
- (c) birds.

The teacher may instruct the children to omit mention of colours, which might otherwise predominate unduly. It is not enough that children should compile lists of words; they must use them again and again. In this way the pupils will widen their vocabulary, and learn to use and spell the words which they have gained.

Alternative forms of expression should be practised. In one lesson the pupils may find all the forms they can of expressing 'said'; for example, 'replied', 'responded', 'quoth'. Words like 'laughed' may be substituted if a person spoke with hearty cheerfulness, 'whispered' if he spoke low, 'cried' if he spoke loudly, 'groaned' if he spoke most unwillingly.

A certain artistic teacher is accustomed to give lessons on 'dressing' words. The names of objects which have been seen on a beach are collected from the members of the class—'sand', 'waves', 'sky', 'sea', 'shells'. These nouns are duly written on the blackboard, the children supplying adjectives, only the most meritorious of which are written beside their appropriate noun, thus: 'Sand—yellow, shining, golden.' Next a sentence is demanded to 'dress up' each of the nouns: 'The golden sand stretches for miles and miles along the edge of the sea.'

To an older class, such a passage as the following may be given for selection of verbs:

'I never saw daffodils so beautiful. They grew among the mossy stones about them. Some rested their heads on the stones, as on a pillow, the rest tossed and danced, and seemed as if they laughed with the wind, they looked so gay and glancing.' Then may follow an exercise in the course of which the pupils write down verbs which represent the noises made by rain, ocean, wind and stream under varied conditions.

The Form of the Sentence

As pupils improve their powers of composition, many sentences should be analysed by the teacher for their benefit. The principles of construction and of arrangement must be demonstrated. The sentence must preserve unity of thought; the long, involved sentence should be avoided, yet variety of length and of construction must be practised. Except in questions, the subject generally precedes the verb. 'I had read his book, and I sent him an invitation,' should be remodelled to begin 'Having read his book.' It must be realized that a singular subject demands a singular, a plural subject a plural verb. The principle that double negatives must be avoided may be emphasized in completion tests. Words and phrases expressing time come early in the sentence. Split infinitives are to be avoided. Pupils should be made conscious of these and of other principles underlying the formation of sentences if they are not merely to write, but to write well.

The use of paragraphs should be founded upon an examination of the reading-books used by the pupils. A series of disjointed sentences, such as have been uttered by children during a 'picture-talk', may be re-arranged in the form of paragraphs.

The 'picture-talk' will supply many opportunities for the internal variation of the form of the sentence. Looking at a picture, the pupils may be asked to complete sentences beginning 'In the picture', 'Around her waist', 'On her head', 'The woman, whom I see'. Conversely, the end of the sentence may be given, the children supplying the beginning, as great a number of variations as possible being introduced into the construction.

Capitals, Full-Stops and Question Marks

The children's simple primer is punctuated, and the attention of the readers should be drawn to the marks employed for this purpose, and to their significance. A passage written on the blackboard without punctuation may be remodelled at the suggestion of the pupils, so that they shall have an ocular demonstration of the improvement in clearness which punctuation may effect. Not only the clearness but the meaning of a passage may be modified by marks of punctuation. Let the teacher write on the board: 'Bill says Tom is an ass,' afterwards changing the sense of the expression by the introduction of commas, thus: 'Bill, says Tom, is an ass.' Without defining their attitude to themselves, the pupils will soon come to realize that the conventional marks have a rational justification.

The capital letter demands attention almost from the beginning of written work; but it will be unnecessary, burdensome, and confusing to inflict all the current uses of capitals upon young children at the same time. The first to be taught is the employment of the capital letter at the beginning of a sentence. Next, as soon as it is introduced, the pronoun 'I' must be written with a capital. Such is the curiosity of children that before capitals are taught to them, they tend to

experiment at random with these vivid and striking forms. The use of capitals in writing names of places, days of the week, holidays and initials should be taught thoroughly when the occasion arises; and whenever stanzas of poetry come to be copied, the capital letter should be used to begin each line. There is nothing to be gained by postponing a difficulty when postponement involves the establishment of a faulty habit. For the same reason capitals may be employed in headlines, as soon as headlines begin to be used.

Other rules governing capitals may be postponed for a year or two—for example, that quotations, adjectives derived from proper nouns, etc., begin with a capital letter. But whenever these have to be copied, the transcription should reproduce faithfully the capitals in the text.

The full-stop should be taught as soon as sentences are written. The children may be told that it marks the end of a thought which has been expressed; and that when another thought follows, the full-stop divides the two. When capitals and full-stops have been practised sufficiently, the question-mark might be introduced, since without it many questions might be read as statements. Children know what a question is; and whenever the teacher writes a question on the black-board, he may call upon a pupil to insert the proper mark of interrogation, thus drilling him in a desirable habit, while making him an active participant in a minor part of the operation.

Parts of Speech

In order to feel the need for a classification of words, the young pupil should thoroughly understand the function of each part of speech before he is introduced to its name. From a page of his primer he should select all the words that name things; he will then find in 'noun' a convenient technical term for his own use. Once understood, this term should be regularly and systematically applied. While a logical definition of each part of speech should not be exacted from young children, a simple general notion of the function of the noun, verb., etc., should be regularly instilled until it shall have

become clear and familiar to all. Variety of method is essential to prevent elementary parsing from becoming formal and sterile. Such exercises as to write down the names of objects which are passed round while the children keep their eyes closed, to write down a list of objects to be seen at the sea-side, to underline all the names included in a printed circular, and to make sentences to include names of objects, may be introduced into the treatment of the noun. Similar exercises should be adapted to the distinction between common and proper, singular and plural nouns, grammar being treated not as a task, but as a pleasure.

The adjective will present few difficulties if, in the early stages of its treatment, it is called a 'describing' word. In the majority of cases an adjective should convey or extend a mental picture: 'ragged mountains', 'golden light', 'chubby infants', 'deep defile', 'airy wall'. From an assigned passage lists of adjectives may be made. One of the best exercises with adjectives and adverbs is the completion of sentences by the insertion of the missing part of speech: 'The..... sea itself, when I could find.....pause to look at it, in the agitation of the.....wind, the.....stones and sand, and the.....noise, confounded me.'

A verb may be defined at the outset as a 'doing' or 'telling' word. From an examination of a number of sentences in their primer, the pupils will soon arrive at the conclusion that the verb is the most important word in a sentence, since no sentence exists without it. Verbs of being, which present special difficulties, may be treated later than others. From a given passage the pupils should now select the verbs of doing and the verbs of being, listing them in parallel columns. Transitive and intransitive verbs may be treated in the same way.

Exercises involving adverbs should be practised. 'The knights broke their lances fairly.' Without 'fairly' the sentence is complete; but the reader does not know how the lances were broken—'fairly' shows that the lances were shattered by their fair and square impact on the armour of each

adversary. Substitute other adverbs in place of 'fairly'. It is seen that an adverb adds to the meaning of the verb. Now let the children suggest adverbs that show not how the lances were broken, but when and where—'yesterday', 'here'. Adverbs may be listed from a page of print in columns headed respectively 'how', 'when', 'where', and perhaps 'why'. It is not difficult to adapt the devices that have been suggested to the teaching of the remaining parts of speech.

Subject and Predicate

The distinction between subject and predicate was drawn as early as the time of Plato, before the whole of the eight parts of speech had been discriminated by the Greek grammarians. Hence pupils may be expected to appreciate this distinction even before they have become thoroughly at home with all the parts of speech. The teacher writes up several sentences; then draws out a form one half of which is headed 'That which we are speaking about', the other 'What is said about it'. Under the former heading are placed the subjects of the selected sentences, under the latter the predicates. Next, each pupil prepares his own form, and proceeds to analyse a new set of simple sentences in the same way. The teacher now writes up a series of subjects only; the pupils add the predicates. Afterwards predicates are furnished, to which the pupils prefix appropriate subjects. Finally a number of sentences from a reading-book are subjected to the process of oral analysis.

Composing a 'Class Book'

Children are easily inspired to attempt an imitation of adult activities; and the co-operative composition of a 'book', although a task in advance of their years, will give them a motive to struggle with difficulties which otherwise might have deterred them from writing. The 'book' may be composed upon a literary, geographical, historical, or other theme. In connection with history, for example, the pupils may become interested in the project of writing the lives of

eminent Englishmen. Each pupil undertakes one 'life'; he collects materials, reads all that the school library can offer, persuades his parents to obtain a more adequate biography from the public library or elsewhere for his information and guidance, brings his notes to the teacher for criticism, possibly gives a short lecturette to the class, and finally writes up the 'life' during his leisure at home. The essay must now be edited by the teacher; and a fair copy written. The fair copies of such 'lives', written on paper of uniform quality and size, should be bound as attractively as possible, perhaps between cardboard covers ornamented by the colourful and artistic papers in which the Chinese are wont to enshrine their gifts. The 'class book' may be taken home by each of the pupils in turn, to be read and appreciated in the bosom of the family.

Under similar conditions books of anecdotes, poems, essays, geographical descriptions or other connected materials may be made; or a book may be written upon any given industry, the parts of the work being appropriately divided among members of the class.

Letter-Writing

If the great age of letter-writing is gone, there still remains the need of moderate accomplishment in composing either a friendly, a formal or a 'business' letter. Two aspects of letter-writing must be mastered, firstly the mechanical and secondly the rational aspect. The former, being concerned in the main with beginnings and endings, should present little difficulty. Imitation and repetition are sufficient to ensure a conventional knowledge of how to address, and how to conclude, a letter of a given type. The beginnings and endings of letters of the friendly, the formal and the commercial type should be submitted to comparison and analysis. Ingenuity is necessary on the part of the teacher if the aim of letter-writing is to be really the pupil's own. Imaginary occasions for correspondence are easy enough to invent; the difficulty lies in arousing a genuine desire on the part of the pupils to

write. Members of one class may write out formal invitations to members of another class to attend a dramatic performance which they propose to present. One of the most adequate occasions for writing friendly letters is found when the children of one school correspond under a definite arrangement with those of another school, describing their experiences and environment and receiving similar accounts in return. Such letters may be drawn up by committees or groups of pupils as co-operative efforts. Letters between inland and seaside, or between 'mountain' and 'plain' schools, not only tend to establish friendly and sympathetic relations, but also introduce pupils to many new ideas. Thus the desire for adequate written expression is intensified, and correct spelling and good writing come to be consciously adopted as valid ends.

Dictionary Practice

In the every-day lives of educated people, the dictionary and the encyclopædia hold a respected place; but for every one who is in the habit of consulting these aids, there are a hundred who are not so. The beginnings of such a habit may be established in the upper classes of the elementary school. Lists of words for spelling may be arranged under initial letters, and subsequently in strict alphabetic order. This exercise may serve to add interest to an otherwise pointless lesson in writing. It is now time that the pupils should be supplied with dictionaries. A list of suitable words should be allowed to grow on the blackboard as lessons proceed; afterwards a certain time is allotted for finding the words in the dictionary, and for writing opposite to each word its meaning. Later, an index or an encyclopædia should be consulted, the function of an index being distinguished from that of a table of contents. Pupils will gradually become accustomed to other conventions which facilitate the process of reference; for example, that in an atlas a certain order shall be followed; Europe preceding Asia, and so on.

That the use of the dictionary can be overdone, that valuable time may be wasted in unskilful turning of pages, is evident enough. But such a degree of facility in its use should be attained that the pupil can help himself to solve some of the difficulties which he cannot but encounter in literature. He need not keep the dictionary invariably by his side; neither should he abandon the thread of a narrative in order to hunt down a hard word, when the context makes the meaning of the text clear enough for his purpose. It is in connection with the detailed study of a passage that the utility of the dictionary becomes greatest. Judgment must be cultivated in the selection of those synonyms or meanings that are most appropriate, from among those which the dictionary suggests; in this way precision of language may be gradually increased. As a means of augmenting the pupil's vocabulary, the dictionary, although distinctly valuable, should be regarded as secondary to breadth of reading and of oral experience gained through conversation and instruction. Children should be encouraged either by systematic home-work, or by frequent admonitions to look up the meanings of certain words, to consult the dictionary in their own homes.

Phonic Exercises

It is not only the pupil who needs phonic exercises. Unless the science of phonetics has been studied by the teacher, he is in a poor position to be sure whether his own interpretation of pure sound is adequate to the needs of the classroom. Once he understands the production of standard sounds, he can afford to be firm in insisting upon good oral work. Even when he has taught children how to enunciate vowels, diphthongs and consonants, he is faced by the problem of dual speech, inasmuch as children tend to master two languages, one for the school and another for popular use. Yet the main thing is that children should be able to speak clearly and distinctly; if at times they prefer to do otherwise, it will remain always in their power to reform their own utterance.

Phonic charts, wisely employed, give valuable aid. On these charts, beside the letter or letters of the alphabet which represent a sound, words which contain the sound are printed. Less attention is paid to the sound in isolation than to its incorporation in familiar words. Young children should be taught to imitate the positions of the lips and tongue that are demonstrated by the teacher. The sounds in characteristic jingles, such as 'Old King Cole', should be carefully practised. Thus:

How many days can baby play?
Friday, Saturday, Sunday,
Monday, Tuesday, Wednesday, Thursday,
Friday, Saturday, Sunday.

Consonants may be practised in such connections as 'Let dad do it', 'his horses'. Sounds that are really diphthongs should be taught as such. 'Who saw him die?' '“I,” said the fly.'

Sounds like 'a' in play, and 'i', if ended on an 'e', are easily produced with accuracy. Sounds like 'o' and 'ow' involve rounding the mouth. A short period should be set aside for phonic work, and brief phonic exercises may precede any lesson almost irrespective of its nature.

Poetry Beyond the Stage of Infancy

A very large part of the elementary education of the ancient Greeks was devoted to poetry: and there is no subject that can fully take its place. The essential aim of the teaching of poetry should be enjoyment, which depends chiefly upon the success of the teacher's presentation. The beauty of English literature, sympathy with nature, the music of words, acquaintance with the personalities of poets, humane attitudes towards one's fellows—these and other values are inherent in the æsthetic and intellectual appreciation of poetry. Ballads and descriptive poems should be recited and learned as illustrations of historical and geographical studies. Children should often select poems individually for committing to memory. At odd times, when a

lesson has been completed, pupils may be invited to say in turn a piece of poetry, only those poems which are worthy of the standard of the class being tolerated. Some teachers distribute cards, each being inscribed with a different poem, so that every member of the class may keep one which he desires to learn. At times the class should become a verse-speaking choir, each child so modulating his voice that the result is as pleasing and harmonious as that of a choral song. Children may construct a chart containing the names of poems that they like.

In the upper classes of the elementary school, nothing prevents but that children should themselves make verses. They should first practise tapping out beats in a line, in order to gain an understanding of rhythm. They may add a new verse to a poem with which they are already familiar. Or the teacher may suggest the line:

'A was an apple with cheeks rosy red,' to which the pupils add alternative suggestions, such as:

'B was a bullock with horns on his head,' or

'B was a boy who was too fond of bed.'

Some of the children will soon be able to rejoice in the acquisition of 'a fresh power and a new form of expression'.

Short poems are more suited to the needs of children than long, unless the longer poem, like some of Macaulay's *Lays of Ancient Rome*, be eminently congenial to their interests. Rhythm should not be allowed to degenerate into a mere sing-song; nor should 'baby' poems continue beyond the stage of infancy. A poem to be learned may be written in advance on the blackboard, or in white ink on brown paper. But the poem should not be seen until the teacher has recited it, for on the teacher's art the impression made by the poem chiefly depends. When the poem has been read or recited, difficulties are explained, and questions upon the subject-matter may be asked. The children should themselves select the 'pictures' which the poem includes: and some teachers like them to exercise their judgment by expressing their preferences for certain lines or stanzas, although others

maintain that this practice amounts to forcing the issue by exacting standards of criticism at a premature stage, and that it is deleterious, in as much as it impairs the sense of the unity of the whole. Probably some poems lend themselves more readily to dismemberment than others. Rhyme, length of line, alliteration, etc., may become the subject of brief comment. For a detailed illustration of the teaching of a poem the reader may be referred to the chapter on 'Affective Lessons'.

When a poem is to be memorized, questions which the teacher may ask upon it should be answered in the words of the poet himself. In this way the verses may be half-learned before any conscious effort to commit them to memory has been exerted. The poem should be copied into note-books; this practice also conduces to memorization. Add to all this two or three oral readings by the teacher, and the brighter children are ready to take up the repetition with little or no further ado. Nothing but oral reading reveals the sonorous quality of the words. As children advance, narrative poems begin to be supplemented by other forms; but long or disconnected poems should be remembered only in isolated lines or couplets. Shorter poems are more readily committed to memory when learned as a whole than when learned stanza by stanza; but a combination of the 'whole' and the 'part' methods of memorizing is perhaps the best.

Lecturettes

If it were not that only one child at a time can deliver a lecturette to a class, the method of teaching by this means would be generally popular. But as it is, the lecturette is so valuable a means of self-expression that its use is being widely extended in the schools. Many a pupil is able to give an interesting and instructive talk upon an operation or a hobby that he knows something about, and in which he is interested. Nervousness may thus be diminished and valuable confidence gained. To a large proportion of people, the ability to make a short address to others is of such value that

its foundations ought to be laid in childhood. The listening class can readily be led to adopt a friendly and sympathetic attitude, and the degree of attention paid to the child who lectures may compare favourably with that which is extended to the regular teacher. Lecturettes should generally be founded on experimental rather than on bookish knowledge; an instance is that a girl who lectured to her classmates upon 'St. John's Ambulance Cadets', a corps of which she was a member, did far better than one who followed with a lecturette upon 'The Manor', a subject of which she knew nothing at first hand.

A class may be organized for lecturettes on the lines of a public meeting. A chairman is elected, also a secretary, whose duty it will be to take minutes of the proceedings. The chairman may appoint a censor, whose function is to make notes of ungrammatical expressions. One of the boys may give a lecture on birds of the locality, stopping occasionally to invite someone to imitate a certain bird-call, and imitating it himself if there is no satisfactory response. The lecture may be concluded by the recitation of a poem upon one of the birds. Afterwards the lecturettes should be discussed by the class, still organized as a meeting; and the pupils may be trusted to award marks for proficiency if such are to be recorded. At the close, the teacher expresses his own ideas on the subject.

Suggestions to Teachers

This chapter may conclude with a brief summary of the *Suggestions for the Consideration of Teachers* issued by the Board of Education. English is not a mere time-table subject, but enters into every lesson and is taught by every teacher. At first English may be treated as a matter of speech-training. Pictures and picture-books are used freely to encourage infant pupils to talk. The teacher should tell or read nursery rhymes, simple poems and songs, fairy tales, folk-lore, etc., not breaking the thread of a story to explain every word or detail. The children repeat or retell the stories. Vocabulary has to be enlarged; fluency must be

attained. Good articulation and pronunciation should be required whenever a passage has been thoroughly learned. It is implied that there should be no toleration of such ugly errors as: 'Did you come here to-die?' 'No, I came here yester-die.' As to dialect, local peculiarities need not be annihilated, but may be minimized. Reading should follow the acquisition of facility in speech and of a fairly large vocabulary. For practice in oral reading a class may be broken into sections. Each reader should aim at giving pleasure to his audience. To this end clearness of utterance must be emphasized. Fluency and expression are also to be desired; but expression should neither be exaggerated, nor permitted to become so mechanical that the voice, for example, is invariably raised at a comma. From the beginning reading should be a matter of interpreting phrases rather than individual words, and the key-words of the phrases should receive the accent. Faults in reading may be detected if the teacher adopts the plan of following the reader without a book.

The choice of books and of poems is momentous. In default of a wide choice of books at home, the school should see to it that the class or school library is accessible and adequate to the needs of childhood. In the younger classes there should be plenty of 'easy continuous stories, imaginative, romantic or amusing', in order that interest may be aroused and curiosity stimulated. A love of beauty in thought and language should be awakened by the reading and learning of English poetry. The choice and treatment of suitable poems depends largely upon the degree of the teacher's appreciation and mastery of literature. All the poems selected should be among the best of their kind. The understanding of every detail is less important than the grip of the central idea of a poem, and the response of the pupils to its rhythm. 'For purposes of reading aloud poetry is really more suitable than prose, owing to the help afforded by rhythm and metre.' The teacher himself must read each poem aloud, with appreciation and feeling. Out of reading,

as a poem becomes more and more familiar, recitation naturally flows.

In the senior classes, however, the proper business of the pupil 'is not learning to read, but reading. . . . Books should be used as a source of enjoyment, as means of gaining information, and for the purpose of language study.' Pleasure is the main stimulus to reading, but quality of pleasure should be taken into account, and a good taste carefully nurtured. Only entertaining books, which are at the same time in some measure works of art and sincere expressions of the writer's personality, should be recommended for private reading. 'Capacities, likes and dislikes' should be considered. The initiative of the child should be respected, and silent reading, the only type of reading that will be used much in later life, will prevail. The teacher's own oral reading should be freely employed in order to invigorate the appeal of literature. Books for children should give prominence to action and simple motivation. They may include essays, and legends and fables of a longer and more intricate type than those with which the children when young have already become familiar. Novels of proved worth, and others with which the teacher thinks fit to make experiments, should now be read; nor should appropriate magazines be neglected. Well chosen plays may be read and acted.

Literature should not be treated as a mere 'knowledge' subject; nor should words, however fine, that lie beyond the range of the children's tastes be included. Abridgements which spoil the quality of good books cannot be tolerated, but such abridgements as Lamb's *Tales from Shakespeare* are not open to this objection. Most children develop literary appreciation, if at all, mainly as a form of infection from a gifted teacher.

In oral reading, modulation should not become artificial, nor should emphasis be exaggerated.

The niceties of rendering should now be carefully studied. Such points as where breath should be taken and pauses made; the best way to phrase a sentence; the effect of changes of emphasis, tone and

speed should be discussed. Drama both in verse and prose should often be read; also passages from the Bible. Different renderings of the same piece should be compared and criticized by the class.

Poetry must be read aloud, children being more amenable to the suggestion of sound than to shades of significance in language. It is unnecessary for every child in a class to learn the same poems; some will appreciate one variety, others another. Poems outside the children's books should be read to them from time to time. Comparisons between poems, or between stanzas of a poem, may be invited; but ought never to be forced upon pupils. Some degree of facility in reading should be attained before any intensive study is attempted.

Of libraries, three kinds are useful to children, the class library, the school library and the public library. The books of the school library should be kept somewhat up-to-date, classified, and perhaps covered with paper or cloth by the pupils themselves. The pupil should put each book back properly. It is a good plan to let the class do a little of its work in the reference room of a public library. The aid of parents should be enlisted in order that adequate library facilities may be provided within the school.

In English elementary schools it has been the custom to regard the teacher, in American schools the text-book, as the principal source of the pupil's information. Gradually this contrast is breaking down, and in British schools the pupils are now expected to prepare many lessons for themselves. Pupils should learn to use books of reference, and to select from other books whatever is relevant to their specific purpose: 'It is desirable that they should come to think of reading not only as a means of escaping from practical life, but as a means of coping with it in all its aspects.' The school library must therefore contain others besides story-books—practical works, reference books and especially 'a first-rate English dictionary.'

In reading, some passages should be selected for exhaustive and intensive study, including such grammatical analysis

as the pupils can comprehend. Such work may be regarded as a substitute for the training which is afforded in secondary schools when one language is translated into another. Attempts to vary the phraseology of a good sentence will serve to reveal the principles upon which it has been constructed: 'It is good oral practice to conjure as it were with the verbal materials of a piece of English; varying the subject and object; converting short sentences into long, subordinate into principal, concrete into abstract, active into passive, direct speech into indirect and vice versa; or replacing particular words and phrases by others.' The parts of speech will be learned as their functions come to be appreciated, and some degree of mastery of accident and syntax should be attained. Once the ideas to which they correspond have been grasped, appropriate grammatical terms should no longer be withheld.

The approach to composition is through oral speech, gradually woven into a connected whole and extended in its scope and duration. Examples will be furnished by capable members of the class, and free use should be made of dramatization. At first written exercises should be short and easy rather than ambitious. Before a subject is written upon, clear ideas about it must be formed. Spelling is assisted by reading, and drill in spelling should be as individual as possible in order that the time of good spellers shall not be wasted. Each child should have to learn the spelling of all the words that he writes, and should correct those of his own mistakes that are due to carelessness. Oral spelling should have constant reference to writing or print; but exercises in dictation may be said to test rather than teach spelling.

Topics for written composition should not be too philosophical for the pupils, nor too difficult for analysis by them. Still less should the topics be beneath the children's powers. Compositions should not be set upon whole books, but upon particular incidents or scenes. The art of description is fundamental to good writing. Variations of scene, incident or character may be suggested as means of stimulating

imaginative power. The form of epistolary writing should correspond to its purpose, which should never be remote from the contingencies of ordinary life. Good models not too far beyond the pupil's range should be studied and imitated. If an exercise cannot be corrected with the pupil individually, mistakes common to several children may be treated collectively, such errors as 'their' for 'there' being explained according to rules of syntax. The main object of the teacher of composition, however, is not negative but positive; the correction of mistakes being far less important in his eyes than the encouragement of merit.

CHAPTER XVIII

MATHEMATICS

The Scope of Primary Mathematics

IN the primary school, mathematics means mainly arithmetic; but there is no reason why children who are capable of understanding geometrical or other mathematical relations of a practical character should not be encouraged to broaden the scope of their activities. Mathematics may be regarded as one of those great achievements of society the elements of which must be transmitted to every child. Its various branches constitute only one subject. At the same time, it is easy to exaggerate the extent to which it is used in ordinary social life; there is no point in trying to make everybody a mathematician. Enough mathematics should be taught in the primary school to meet the ordinary requirements of the people; the rest is a matter for secondary or for vocational education. In the elementary stages, specialized training for any particular business or trade would be entirely out of place. Such a training involves a skill in measurement and a competence in calculation, in certain directions, altogether beyond the customary needs of social and institutional life. All that ought to be demanded of the primary school is a broad but definite foundation upon which future mathematical progress in any direction may be soundly established.

Mathematics is included in the first place for its utility; but there can be little doubt that it has a special value as a means of developing the higher mental powers. No other elementary subject introduces the mind of the child so gradually and so consistently to the habit of thinking in the abstract. Although in the past the disciplinary theory of education has been over-emphasized, a subject of which this can be said must be regarded as a particularly useful field for the development of the reason. That reasoning power developed through mathematics may not carry over to literary

or other fields is perfectly true, but it must touch many subjects at some point or another, either because of similarity of content, or because of the identity of their ideals or methods with its own. To find the average number of children in the classes of the school is not merely an exercise in addition and division, but also a miniature lesson in social science and a brief introduction to statistical method.

Practicality

In arithmetic, half the battle lies in the selection of examples. These should be related to the experience of the pupils, and also to their interests. Where necessary, a few minutes may be devoted to the widening of experience and interests in order that mathematical processes may not be unduly cramped. In one lesson the teacher may begin by interesting his pupils in the idea of making their own bookshelves. Soon he will have them making right angles, measuring heights, lengths, breadths and thicknesses of shelves, calculating surface measurements and quantities of timber; in fact, working out many geometrical and arithmetical problems in a congenial aura of practical endeavour. There may be no such thing as an arithmetical instinct, but there certainly is a constructive one, and on this the teacher may build many artistic lessons of the mathematical type.

Mathematics should be made practical; but practicality is a term which need not be narrowly interpreted. What relates to the actual conditions of national finance, or of school statistics or of ordinary business transactions, may be regarded as practical. But the children should see it as such before they work problems concerning it. There should be much actual measurement of weight, time and money; of lines, surfaces and solids. Many examples may be founded upon the divisions and applications of a foot-rule and a yard-measure. Clocks, pint-pots, coins and weights will provide innumerable others. Examples in proportion are provided when maps or drawings are made according to scale. It is not a waste of time to insist that for purposes of a sum the

room, if it is to be measured at all, should be measured accurately; or that judgment should be cultivated as to how many quarts go to fill a bucket of standard size—if there is a standard size for buckets. It is things like these that, by making arithmetic practical, invest it with cogent meaning and value.

Precision, Thoroughness and Speed

It does not suffice to understand by means of counters that four from six leave two; this operation and hundreds of others must be thoroughly memorized. To this end repetition is required, and not only repetition, but frequent variation of statement, since a child may know that four and two are six without being aware that four from six leave two. Very young children may repeat simple series, such as 1 and 1 are 2, 2 and 1 are 3, 3 and 1 are 4; or 2 and 2 are 4, 4 and 2 are 6, and so on. Variation is introduced when the teacher asks how many are 2 and 1, how many are 1 and 3. If 6 and 3, for example, be taken as a different combination from 3 and 6, there are 81 addition combinations, with complementary subtraction, which have to be learned up to 9 and 9; and once a combination has been learned, it can be easily and quickly revised almost every day.

Quick, short, easy exercises are better than long, hard ones. The important question is not how many minutes to the sum, but how many sums to the minute. Habits of mental reaction to such a stimulus as 'seven times six' must become automatic; for ease, economy, celerity and sureness are all phenomena which arise from and accompany well-defined habituation. Clumsy methods must be eliminated; to compute a hundred half-crowns by the longest method is analogous to reckoning the number of sheep by counting all the legs, and dividing by four.

It is hardly necessary to add that mathematics is an exact science. 'Near enough' is not good enough; approximation may be excellent as a means of forecasting, or of rapidly and roughly checking, an answer, but cannot be regarded

as a substitute for exact truth. Unless for some special reason, it is unwise to give much credit to an answer that is 'nearly right'. For the cultivation of precision, there is nothing like a firm insistence upon the mastery of every possible step, none being taken for granted. So minute are the steps that count towards precise mathematical knowledge that a pupil may be able to find the cost of twelve tennis-balls at one-and-sixpence, but not that of a dozen. Hence the full, logical setting-out of arithmetical work is a practice of high value. Care in making figures is greatly to be commended, not merely on æsthetic grounds, but as a means to the prevention of errors.

Oral Work in Arithmetic

Like English composition, all arithmetic is at first oral. Before he can make the figures and the signs of operation, the child learns simple facts regarding number and expresses them in words. Nor is oral work to be discontinued as he advances in proficiency, for an important part of every lesson in arithmetic should be 'mental'. The so-called mental or, rather, oral arithmetic—for obviously all arithmetic except that of calculating-machines is mental—should be freely used for two purposes, one to introduce any type of problem, the other to recapitulate, review and mechanize operations with a view to accuracy and speed. Sometimes the children should be required to write down the answers only to simple questions which have been propounded orally or set down on the blackboard.

Sometimes oral work should be used to remedy defects in tables or elsewhere; at other times it should be progressive and varied. Even when examples must be written, those parts which can be worked orally should be so done. In this way marginal calculations may be reduced to a minimum, and speed increased. Briskness in oral work is stimulating, but the teacher invariably meets with difficulty from the fact that the abler pupils are ready with the answers long before the duller. It would be advisable sometimes to divide the

class into sections, the brighter in one section, the duller in the other. One section may be working written examples while the other engages in oral arithmetic. Some degree of freedom should be permitted in oral work, lest enthusiasm be damped. The writer has found it a good plan to pretend to be the grocer dispensing articles to his customers, or the greengrocer selling fruit and vegetables, or Santa Claus distributing gifts. A touch of imagination makes the whole class kin.

Concrete Aids

Although an abstract science, arithmetic in its initial stages should be taught through observation. The youngest school-child may handle and use counters. 'By means of these,' according to one syllabus, 'he may realize number; he may find out for himself the relations between a number and those immediately above and below it; he may analyse the simple numbers and investigate the combinations of numbers; he may separate groups to find differences, combine equal groups to find products, and divide groups into equal parts.' Evidently the logical way to proceed from conceptions of concrete to conceptions of abstract number will be to vary the nature of the objects used as counters. Thus the irrelevance of the character of the objects to the art of numerical computation will gradually become apparent. The child soon learns that with sticks, as well as with stones, six and two make eight. The work progresses from objects to numbers, although at later stages of instruction objects should continue to be introduced in connection with new work. For example, actual scales, weights and measures should find their way into the classroom.

Apart from counters, a great variety of concrete aids should be imported into the teaching of young children. There will be coins to be handled and exchanged, apples to be divided into equal parts for the illustration of fractions, foot-rules and yard-rules for measurement and calculation, quart-pots and pint-pots to be filled and emptied, bank pass-books

that may be utilized in problems concerning interest. Moreover, the ever-present room and all its contents are available for purposes of illustrative teaching. After the initial stages of an operation have been fully comprehended, all these become useless lumber which may be relegated to obscurity, an enriched concept having taken their place in the mind of the pupil.

In the lowest class of one school, each child had a tin containing ten strings of beads. On the smallest string was but one bead; on the largest ten. In every number lesson, these strings of beads were used for 'work' in addition and subtraction. A child was expected to verify any statement by holding up the right number of beads. If he had to subtract 4 from 6, he took the string of six beads, counted them, covered four of them, and gave the answer 2, showing for inspection the two beads that remained uncovered. At this stage of schooling time is no object; the infant's calculations must not be hurried. In an effortless way he is gradually gaining a grip of elementary numerical relations.

In spite of an eloquent protest by Horace, to the effect that the poetic qualities of the mind are being tainted and impaired by incessant practice in a certain type of mental arithmetic, ever since ancient Roman times the schoolboy or schoolgirl has been expected to work many sums involving money. When such sums are introduced for the first time, common coins should be handled and exchanged for their equivalents. The child should realize that a shilling is a coin of a certain size, equal to half a florin or to twelve pennies in value, and that twenty shillings make one pound. Passing on to weights and measures, the pupil should enjoy some direct familiarity with the pound, the ounce, the foot, the yard, the square foot, the cubic foot or the quart, before he works out problems in which any of these is involved. Area may be comprehended as the result of the examination of a rectangular piece of wood; cubic capacity following the observation of a brick. Rulers and tape-measures are required for the measurement of length. Children should

learn to tell the time from the clock. Fractions may be illustrated by dividing in the requisite way a rectangle drawn upon the blackboard; and decimals by dividing a sheet of paper both longitudinally and horizontally into tenths, so that the small squares or rectangles represent hundredths of its superficies. Small fractions may be illustrated on the foot-rule, or parts of the squared paper may be shaded so as to represent them. Thus in many ways arithmetic is dependent for its intelligibility and interest upon the skilful provision of concrete aids.

Activity of the Pupils

In no subject is the principle of self-activity to be respected more than in arithmetic. The instinctive tendencies of children to action may be turned in some measure into mathematical channels. Bright pupils often take a real delight in solving a difficult arithmetical problem. But the pupils must come to regard the problems as their own. When such a frame of mind is found in a class, the pupils will bring to the teacher their questions, a sure indication that they have taken the initiative in attacking their various difficulties.

Pupils who have finished their set work may be permitted to make their own way through the examples in a text-book. This privilege should be regarded with honour. It is of little use to work sums on the blackboard for children to whom they present no difficulty; such pupils should be encouraged to do something else while errors are being corrected by those who have made them. With young children a great obstacle to self-activity is the mechanical labour and difficulty of making figures on paper. For this reason a large part—in the younger classes the main part—of the work should be taken orally. Exercises in the money table, for example, should be culled mainly from the practical experience and activities which normally fall to the lot of the schoolchild—how small sums are spent to satisfy the needs of the family or of the individual child; how boots, clothing, fruit and groceries are bought; how rent, fares and

admission to places of amusement are paid; how books and materials for play or gardening are purchased or sold; how articles of comfort, repair, replenishment and decoration are provided.

Diagnosis of Errors

Arithmetic is a subject in which individual attention is necessary if a grave waste of time is to be avoided. The device of having the class work out a set of well-graded examples, beginning with the very easy and advancing to the very hard, gives an opportunity to the teacher to help each pupil exactly where he sticks. No ambiguity should be permitted to enter into the form of an example. False reasoning must be corrected with patience, often by the aid of a diagram or other apparatus. In merely mechanical work, the pupil should usually discover his own error. It is a great mistake to exact needlessly long mechanical calculations which tend to weary and discourage even the brighter pupils.

As the result of a comprehensive investigation, it would appear that the simple operations in addition which require most drill are $9 + 7$, $6 + 9$, $5 + 9$, $6 + 8$, $8 + 5$, $6 + 7$, $8 + 7$, $9 + 5$, and $5 + 6$. In subtraction the following operations present difficulty to many pupils: $15 - 9$, $9 - 9$, $16 - 7$, $15 - 8$, $15 - 6$, $1 - 0$, $11 - 9$, $13 - 5$, $6 - 0$, $11 - 7$, and $5 - 5$. Frequently the answer 9 is given for $9 - 9$; and 5 for $5 - 5$, attraction serving as a substitute for thought. In multiplication, errors are frequent in the operations 8×8 , 5×6 , 4×7 , 7×7 , 9×8 , 4×4 , 4×0 , 0×5 , 7×9 , 5×5 , 4×5 , 7×0 , etc., 0×6 , etc., 3×3 , 6×8 , 9×6 , and 4×8 . In division, apart from errors with the zero, many mistakes are made in $9 \div 9$, $6 \div 6$, $56 \div 7$, $81 \div 9$, $36 \div 9$, $27 \div 3$, $4 \div 4$, $48 \div 6$, $63 \div 9$, $42 \div 6$, $32 \div 4$, $18 \div 6$, $24 \div 3$, $18 \div 2$, $63 \div 7$, $49 \div 7$, $24 \div 8$, $72 \div 8$, $36 \div 6$, and $64 \div 8$. Attraction is in evidence once more when $9 \div 9$ is given as 9; and $6 \div 6$ as 6. Errors of inversion are not uncommon, as when 63 is treated as 36, etc. In subtraction, multiplication

and division, many errors occur when the zero is involved in the operation. In short division, children should be trained to describe remainders correctly; and in long division, the pupils should invariably apply a test to their results.

Habit Formation

It has already been indicated that if work is to proceed with ease, celerity, certainty and economy of attention, the mechanical operations in arithmetic must be reduced to the plane of habit. To achieve this result, brisk and simple questioning is required. Printed or mimeographed sheets, on which only the answers remain to be written, should sometimes be employed. Pupils should learn to count without conscious effort by ones, twos, threes, etc., and, of course, by tens, to master thoroughly the simple associations involved in addition and subtraction, to add a column of figures at sight without counting, to answer immediately any question involving the multiplication and division tables, or the pounds, shillings and pence tables. If tables and combinations have been properly memorized, there will be no need of counting on the fingers or of writing down numbers to be carried. Clearness and neatness in figuring are of the utmost importance. How many errors in arithmetic are the result of badly-made figures or the disorderly grouping of written work?

Reasoning

Habit is 'a good servant, but a bad master.' No one can be good at mathematics who is enslaved by habit. The function of reasoning is to subordinate habits to higher purposes, and sometimes to transform them altogether. From the beginning, children should be asked many simple questions which require an element of thought, for example, as to whether to add or subtract, to multiply or divide. As their powers of reasoning increase, these powers should be fully exercised. It is a mistake, however, to expect young children to rationalize arithmetical processes as if they were about to enter upon a study of the philosophy of mathematics.

They need not know the reason why a certain method of subtraction has been adopted in preference to other methods. Mathematical thought should follow, not precede, the natural march of the intellect of the pupil. In the early stages, operations should be understood as far as is necessary for all practical but not for all theoretical purposes. Pupils should know what multiplication and division respectively signify, and whether the one or the other should be used, and how. But they should not be expected to understand the place of either process in the theory of number.

Older pupils, having mastered most of the mechanical difficulties of arithmetic, should occupy themselves less with these than with reasoning out simple problems. To this end many problems should be analysed, time being saved by the omission of detailed work. Let the problem be: 'If two bricklayers lay 1,327 bricks in a day, how many should three bricklayers lay in two days?' The pupils are required to set down (a) what is given, (b) what is required. They then write:

2 bricklayers lay 1,327 bricks in 1 day,

1 bricklayer lays $\frac{1,327}{2}$ bricks in 1 day,

3 bricklayers lay $\frac{1,327}{2} \times 3$ bricks in 1 day,

3 bricklayers lay $\frac{1,327}{2} \times 3 \times 2$ bricks in 2 days.

The teacher then passes on to the next problem, not without having ascertained from the pupils that although mathematically valid, the above calculation could only give a contractor an approximate idea of the number of bricks that would probably be laid.

In the course of a single lesson, a large number of problems may be set out ready for solution, without being worked. Let the problem be: 'Find the cost of carpeting a hall

thirty-five feet long, and four feet wide, at six shillings a square yard.' The pupils merely write down:

$$\text{Cost} = \left(\frac{35 \times 4}{9} \times 6 \right) \text{ shillings.}$$

Realism in Arithmetic

Mathematics, being an abstract science, can be studied apart from the realities of ordinary life. Yet there are two reasons why these realities ought not to be neglected by the teacher of arithmetic. One is that the arithmetic which is concerned with realities is apt to be more practical and more useful than the arithmetic which preserves an attitude of aloofness and indifference towards them. To reduce so many tons, hundredweights and quarters to ounces is a futile operation in which in real life nobody ever cares to indulge. The time and effort of the pupil might be more usefully spent. The other reason for making arithmetic as realistic as possible is that real problems are far more interesting to children than unreal. It may be granted that the teacher should not feel bound to make every problem real to his pupils. But the principle of realism is sound. According to a syllabus of instruction for primary schools:

The most suitable problems are those which arise out of actual situations. The school activities offer a rich field from which arithmetical problems may be drawn; the enrolment of boys and girls in the various classes, the attendance at sports, clubs and matches, picnics, concerts, and other entertainments, garden work, manual work, including needlework, the library, the school bank, the school consumption of water or gas or electricity, the assessment of premises for shire or municipal rates may all be turned to account. The preparation of the annual requisition involves the counting of material, the exercise of judgment as to what is serviceable or unserviceable, the estimate of requirements, and the calculation of cost; and in all these the pupils can take part. Building work, fencing, asphaltting, will supply a great variety of problems. So also will local industries, transport, and civic affairs. Many problems arising out of these activities should be framed by the pupils themselves; the ability to discover or recognize real problems may be as valuable as the ability to solve them.

Geometry

At one time the beginner in geometry was expected to reason out all propositions from a set of general principles that he did not thoroughly comprehend. It was not because they were asses that so many pupils failed to surmount Euclid's *pons asinorum*, but merely because they were not mature, abstract thinkers. It is now recognized that the principle of proceeding from the concrete to the abstract should be fully respected. Paper must be folded, right angles found, drawn and tested, simple properties of figures determined by experiment, figures drawn and constructed with set-square and ruler, and sometimes built up from square inches marked on cardboard or other material, parallel lines and circles drawn to measurement and to scale, and so on. Then straight lines should be bisected, eight points of the compass mastered, angles of thirty, forty-five, sixty, ninety and one hundred and twenty degrees learned, common rectangles measured, scale-drawing developed, and simple geometrical problems attempted along the lines on which the pupil has been advancing. On the whole, geometry is a secondary school subject; but in the primary school the pupil should have already learned to answer accurately and without hesitation the simpler and commoner geometrical questions. Many concrete illustrations should be employed, and the pupils themselves should be trained to supply problems for the class to solve.

In a well-considered paper on 'The Teaching of Elementary Geometry', Mr. R. J. Middleton has thus distinguished the place of geometry in the primary school from its place in the secondary school:

Geometry is a subject which has two aspects. On the one, the observational, it is a physical science; on the other, the formal and abstract, it is a branch of pure mathematics. In the traditional treatment of this subject far too much stress has been laid upon the latter aspect, and far too little on the former. Following the work of Euclid, geometry has been mainly taught as a formal deductive science. Among the early Egyptians, geometry was 'an empirical science of simple mensuration.' It consisted of a body of empirical facts and

rules for realizing practical ends. The speculative Greeks rescued geometry from this purely utilitarian stage. They investigated the practical rules of the Egyptians, and for a firm foundation framed abstract ideas of point, line, surface, and of the different geometrical figures. The landmark, the surveyor's peg, of the Egyptian became the Greek point, 'which has position but no magnitude'; the dividing fence became the line, 'length without breadth'; and the tilled field became the surface or superficies, having 'length and breadth, but no thickness'. The various geometrical figures were studied, and their properties investigated, the conclusions being reached by exact inference. Euclid was acquainted with the subject-matter of Greek geometry, and also with the forms of Aristotelian logic, 'a highly organized system of formal reasoning'. By combining the two, he produced a type of logical geometry, which has made the study of spatial forms appear a very complicated and advanced form of knowledge. But geometry is not necessarily connected with the logical form in which we usually think of it. The *facts* of geometry and the *logic* of geometry are separate and distinct, and the separation should be effected in the primary school. The subject for instruction in the primary school is geometry, the facts of geometry, and not logic. Geometry must be divorced from logic. Developing the power of space intuition and training the power of logical demonstration are quite distinct, although we have long tried to develop the former by means of the latter.

Accordingly, Mr. Middleton has summarized the aim of the primary school course in geometry as follows:—

The aim of the geometry course in the primary school then would be:

1. To enable the pupil to recognize the various geometrical forms, both plane and solid, in nature and in the structures made by man.
2. To enable the pupil to construct and to draw the various geometrical forms, both plane and solid.
3. To teach the pupil the important properties of these geometrical forms.
4. To convince the pupil of the truth of the results obtained experimentally.
5. To teach the mensuration of common surfaces and solids.
6. To enable the pupil to apply his geometrical knowledge in the solution of real problems.
7. To give the pupil some conception of the significance and utility of geometrical knowledge.
8. To give the pupil a familiarity with, and a facility in the use of, the language of geometry.

It would seem that, on the principle of proceeding from the concrete to the abstract, models of three dimensions, embodying the circle, square, triangle, etc., should be made familiar to the pupils even in the infant school, and should subsequently be supplemented by the construction of models in paper and by mechanical drawing, so that the continuity of the study of geometrical form may never be seriously interrupted. Moreover, elementary geometry should be brought into relation with spatial ideas that occur in other subjects. It is by no means necessary, however, that in these early stages geometry should be taught as a distinct subject; on the contrary, the teacher of the younger classes may well be content to apply geometrical treatment informally to the classroom, the garden, art, manual work and geography. In the kindergarten, geometrical forms and usages are employed in making objects, in stick-laying, modelling, building, playing certain games, taking up positions at equal distances on the circumference of a circle, and many other activities. At a later stage, problems that have a real significance to the pupils, such as laying out a garden or decorating the school-room, may be treated on geometrical lines. In the upper classes, pupils can be induced without difficulty to interest themselves in the problem of finding the height of the school by means other than direct measurement. Logical definitions and proofs, however, belong in general to the secondary rather than to the primary stage of instruction.

Numeration and Notation

Although far from ready for a philosophy of number, the child should grasp the meaning of the numbers that he uses. To this end the place value of each digit in such a number as 647 should be clearly explained. The relations between numbers should be approached from various angles: how many threes in twenty-one, how many sevens in twenty-one, how many tens in twenty-one, etc. Pupils should count by twos, threes, fives and tens; above all, they must be thoroughly familiar with the sequence of numbers. It may

sometimes happen that a child by no means backward in other subjects, when asked what number comes after forty-nine, may be as likely to answer seventy as fifty. Sometimes the teacher should say numbers for the class to write, sometimes the class should supply numbers for the teacher to write on the blackboard. Without adequate practice, the pupil is very likely to make such mistakes in notation as 640 for 604; but this foggy type of error soon melts in the dry light of familiar use.

Tables

So mechanical must the use of tables become that the expression 'six eights' should automatically, invariably and instantaneously suggest 'forty-eight'. In order to have tables thoroughly memorized, it is advisable to treat them as highly significant, to correct all errors in their use both promptly and adequately, and to include brisk questions upon them in every lesson in arithmetic. Errors should not be emphasized; the point is not that six eights are not fifty-six, but that they are forty-eight. The only types of table which require to be learned automatically are the addition and multiplication tables. Subtraction and division are but special applications of these. The zero must not be forgotten; it must be realized that any number of times naught is naught. The twelve-times table, so useful in dealing with money, will be found to require frequent revision.

Calculations with Money

Before any formal work is done in arithmetic with money, young children should have been made familiar with the common coins, penny, halfpenny, threepence, sixpence and shilling. Some of their earliest lessons may take the form of 'playing shop'. Later the 'pence table' should be learned, so that any number of pence to 100 may be expressed in shillings and pence, and vice versa. Afterwards the children should learn to express any number of shillings to 100 in pounds and shillings; but this step, unfamiliar though pounds may be, presents little difficulty, since the twenties in a given

number may be determined almost at a glance. The greater part of the work should be oral. Pupils should learn also to express in shillings any number of threepences or sixpences to a value of five shillings, and inversely to give the value of a certain number of shillings in threepences or sixpences. They will need practice in adding small sums of money; and for this purpose grocery and other bills containing a few items should be totalled. Most of the work should be easy, the progress to harder examples being graded so carefully that each is preceded by a number of easier ones. Short methods should be applied, five articles at $11\frac{1}{2}d.$ being treated as five at a shilling, less five halfpennies, and so on. The blackboard should be freely used in the demonstration of longer examples, in order that the arrangement of operations may become thoroughly familiar to the pupils.

Setting Out Work in Arithmetic

It is possible for a person to be good at sums without being neat or careful as to their form; but his work will be neither as clear and satisfying to others, nor as exempt from liability to error, as if it had been properly and precisely arranged. One of the teacher's difficulties with young children is to get them to make neat and legible figures, so that there may be no confusion between a 7 and a 1, a 5 and a 3, a 9 and a 0. Uniformity in ciphering should be required throughout the class. In the early stages, written work must be conducted without haste, so that spacing as well as ciphering shall receive its meed of attention. On the left-hand side of every page a wide margin should be left on which rough work that might otherwise have impeded the logical arrangement of the problem may be done. Here also may be written the teacher's comments and the number of the example. Some teachers like a line to be drawn between each example and the next, but, like the use of elaborate headings and red ink, this practice may be left to personal predilection.

If it is to be logical, the arrangement of written work should respect the rule, to err neither by excess nor by

defect. Unnecessary or irrelevant steps should be excluded, but all steps that are necessary to make the procedure intelligible should be shown. Everything that may lead to inaccuracy is taboo. Inaccuracy in arithmetic is seldom fortunate; one must regard as distinctly exceptional the case of the old lady at her first race-meeting, who when asked how she came to select the winning horse replied: 'I was born on the fourth day of the ninth month, and I said to myself, four nines are twenty-four so I backed twenty-four, and it won.' Correct sequence should be respected, but there is no objection whatever to the use of conventional or other intelligible abbreviations.

The reason why teachers spend their time in going round the class while their pupils are working is not only to correct mistakes, but to give help in the arrangement of work. For example, when a series of equations has to be written, the teacher requires the signs of equality to be placed one directly beneath the other. Only in this way may the fundamental identity of each equation with its predecessor be adequately shown.

It is not too much to ask that problems which involve the use of diagrams, such as most of those which belong to mensuration, shall be set out with particular care. Straight lines should be ruled; lettering should be correct and adequate. Similarly, commercial forms such as bills should be carefully drawn. An original bill provides the best model. In general, if a pupil can set out his work properly, it is a sufficient indication that he understands it.

Weights and Measures

The main principle in teaching weights and measures is realism. There is something ridiculous in dealing with gallons or ounces or square inches without possessing a clear idea of the meaning of these measures. Pupils should be able to draw on the blackboard a tolerable approximation to a yard, a square foot, etc. It is not worth while to train them to reduce tons, hundredweights, quarters and pounds to

ounces, and back again; but they should be able to deal with such problems in weights and measures as arise in everyday life. The connotation of an acre should be illustrated by the comparison of this unit with the size of the playground. Although it may take time, the practice of permitting the children to make their own measurements as a foundation for problems is much to be commended. Many examples may be rendered vivid by the simple device of imagining a shop at which yards, feet and inches, as well as pounds and ounces, are bought and sold at sundry prices. If interest flags, one pupil may stand behind a table as 'shopkeeper'; whenever he fails to compute the right sum his place is taken by the 'customer' who shows himself able to correct his reckoning.

Weights should be made if necessary from lead, or by filling bags with sand. Cardboard models of a clock-face are convenient for illustrating the measurement of time. Other measuring apparatus which the school should possess may readily be made in the manual workshop, including foot-rules, squared paper, circular protractors (which may be of cardboard), T-squares, set-squares, cylinders, cubes and cones.

Fractions

According to Aldhelm, 'the most difficult of all things' is 'what they call fractions.' That may have been so to the mind of the Anglo-Saxon scholar, who long ante-dated the use of the Arabic system of notation in Western Europe. Such is still the difficulty of the subject, that an elementary knowledge of the meaning of one-half, one-third, three-fourths, etc., should be thoroughly grounded and frequently illustrated, long before fractions are due to be taught as a formal branch of arithmetic. Much use should be made of objects and diagrams. The easiest and in some ways the most useful form of illustration of fractional relations between numbers consists of a rectangle or other geometrical figure drawn upon the blackboard and subdivided according to the needs of the occasion.

In the Board of Education's *Handbook* the following

suggestion is offered for approaching the subject of fractions in a real and concrete way:

The children may begin with the question, 'How can I divide this length of string into eight equal parts?' and thus discover for themselves that two-quarters are equal to one-half, and two-eighths to one-quarter. They may then determine what lengths of string are respectively three-quarters, three-eighths, etc., of the original length. The inapplicability of their method to the problem, 'How can I divide this length of string into three, or five, equal parts?' will then stimulate their inventiveness, and lead them to the general solution of the problem by measuring the length of the piece and finding by calculation what is one-third or one-fifth of the measured length.

When fractions come to be taught, the symbols used in connection with them should be explained and illustrated. The use of terms such as vulgar fraction, numerator and denominator must be clearly defined. Pupils may be asked to arrange a series of fractions in their order of magnitude, some of the fractions having unity as numerator, others having it as denominator. Lines should be drawn upon the blackboard so that various parts of them may be demonstrated by pupils. Not until a later time are improper fractions and mixed numbers to be introduced. In dealing with a number like $1\frac{2}{3}$, the teacher shows that three-thirds make one whole, and that five-thirds may be more clearly indicated as $1\frac{2}{3}$.

The main things for pupils to remember in dealing with fractions are (1) that operations of multiplication and division take precedence of operations of addition and subtraction, so that $\frac{1}{2} \times \frac{1}{4} + \frac{1}{2} = \frac{1}{2} + \frac{1}{2}$; (2) that fractions to be added or subtracted must be reduced to a common denominator; (3) that cancelling is permissible; (4) that when two fractions are to be multiplied together, the numerators are multiplied and also the denominators; (5) that when a number is to be divided by a fraction, the device to be employed is to invert this fraction and multiply. By numerous oral examples, and other examples to be worked at sight on the blackboard, these salient points may be thoroughly mastered. The battle is then as good as won.

Decimals

To pupils who have never been accustomed to it, a decimal is a fearsome creature. *Cet animal est très méchant.* Its aspect can be rendered less formidable only when points of contact have been established between the decimal and the previous experience of the child. Fortunately among those innocent creatures, fractions, are to be found tenths and hundredths. It may readily be seen that just as the system of numeration to which the child is accustomed has places to indicate units, tens, hundreds and thousands, so it could be extended to have places for tenths, hundredths and thousandths. Let the teacher now produce a metre-rule and measure the length of a wall. It may be fifteen metres, six decimetres, and 7 centimetres. Using the decimal notation, the pupils can write down 15.67 metres.

One-half and one-fifth may now be reduced to tenths and then written as decimals. Various fractions should be reduced to hundredths, and afterwards expressed in the decimal notation. Fractions like $\frac{1}{10}$ and $\frac{1}{100}$, $\frac{3}{10}$ and $\frac{27}{100}$, should now be added, in order that the pupils may be reminded of the relation between tenths and hundredths. 'Which is the larger, $\frac{1}{100}$ or $\frac{1}{10}$?' 'How many hundredths are there in one-tenth?' The class must repeat frequently that the numbers to the right of the decimal point are less than unity, and that the farther they go to the right the less becomes their place value. 'Add together $\frac{3}{10}$ and $\frac{7}{100}$.' 'Which is the larger?—Divide the larger by the smaller.'—'Express the result in decimals.' These illustrations are merely suggestive; in practice the work will be less steeply graded. For example, a little practice with dollars and cents, specimens of which should be exhibited, will serve to reveal to the children many of the advantages that decimals possess over fractions in respect of such operations as addition, subtraction, multiplication, and division. Plenty of practice should be given in expressing as decimals fractions that have the denominator of 10, 100 or 1000. It will be

seen that the decimal is in reality a fraction, the denominator of which is sufficiently indicated by a point.

The pupils must be able to explain the difference between $\cdot 8$ and $\cdot 08$, and which of the two is the larger. When they begin to add, they should realize that decimals may be added like fractions, by means of reduction to a common denominator, e.g., $\cdot 7 + \cdot 08 = \frac{70}{100} + \frac{8}{100} = \cdot 78$. It is well that decimals should be mentally reduced to tenths and hundredths, otherwise pupils tend to fall into such errors as that $\cdot 35$ divided by $7 = \cdot 5$. For some time, exercises should be confined to numbers with two places of decimals. The fractional value of $\cdot 5$, $\cdot 25$, $\cdot 75$, etc., will soon be known and reproduced without conscious effort.

Ratio and Proportion

Abandoning the old 'rule of three' method, most teachers now substitute either a unitary or a fractional method for this old and quaint form of procedure. Let the problem be: 'Six bricklayers lay 4,230 bricks in a day; how many bricks would ten bricklayers lay in the same time?' By the unitary method, it is found that one bricklayer lays $\frac{4230}{6}$ bricks in 1 day, hence ten would lay $\frac{4230}{6} \times 10$. Some teachers prefer a fractional treatment, thus: 'Ten bricklayers would lay $\frac{10}{6}$ as many bricks as six bricklayers in a day. $\frac{10}{6} \times 4230 = 7,050$.' Important as the notion of ratio is, this concept is not one to be formally defined in the elementary school. A good practical illustration of its operation may be afforded by placing a stick upright in the ground, measuring it and its shadow, then measuring the shadow of a building or a tree, and finding the height of the latter by one of the methods already indicated.

Mechanical Drawing and Graphs

Before making an object in the manual workshop, the pupil is required to draw it to scale. He should also draw a plan of the classroom to scale, at first using the ruler alone, but afterwards adding the set-square and compasses. It is

considered that a child of twelve should be able to use these instruments, and to construct angles, perpendiculars, parallels, and simple plane figures such as circles, rectangles and triangles. The bisection of lines and angles should follow; and in connection with the subjects of geography, mensuration and model drawing, definite ideas of plans and elevations will begin to be formed.

Graphs are diagrammatic illustrations of a geometric kind. Their construction and use is now generally taught in elementary schools. There is one kind of graph which records quantities that fluctuate; for example, a graph of rainfall may be plotted from readings of the rain-gauge, or a graph of attendance from the roll-book. Another kind of graph expresses the relation between two series of quantities; for example, between the numbers up to 10 and their squares, or between cost-price and selling-price at a given percentage of profit. Graphs may be used also to illustrate proportion; for example, the variation of time taken in building a wall, or in digging a ditch, in accordance with the number of workmen employed. The interpretation of a graph is quite as important as its construction. Pupils may discover for themselves that direct proportion is diagrammatically represented by a straight line; they are then in a position to infer, on finding that they have plotted a straight line, the nature of the law which connects the quantities plotted.

Suggestions to Teachers

In the Board of Education's *Handbook of Suggestions for Teachers* it is pointed out that the arithmetic to be taught in the primary school is applied and concrete, rather than abstract; but this does not mean that the theoretical aspects of the subject should be discarded. Arithmetical processes, however practical and almost technical may be the material with which they are concerned, must be thoroughly understood. In the upper part of the school, the syllabus will vary in accordance with the leaving age, environment, probable future occupations, mental ability and sex of pupils. Text-

books must be selected with care, and since most of them are comprehensive in character, a selection of suitable examples should be made from them, and added to by the teacher. In the writer's opinion the teacher's own examples, if well graded, should be preserved for future use on cards, on the back of which the answers may be written. There is room for a text-book written specially for backward pupils.

It is held that even in the infants' school the children may write down their own 'shorthand' statement of what they have done, using their own arrangement and wording for easy sums. No attempt should be made at such an early stage to prescribe the most convenient or conventional form; when figures are to be added the children may write them horizontally if they wish, instead of vertically.

Pupils are impeded rather than helped by being shown how to do problems that they can do quite well already. Some teachers prefer to divide the class into two or three sections, according to ability, giving more and harder problems to the abler pupils, who can make progress unaided, while devoting to the others their detailed attention.

Errors may arise (1) from faulty groundwork, (2) from misapprehension of the question, (3) from illogical reasoning, (4) from unsuitable arrangement of work, (5) from ill-made figures, (6) from haste, (7) from attraction, e.g., $8 \div 8 = 8$, (8) from inversion, e.g., $6 \times 8 = 84$. Individual correction is necessary. Many sums should be 'proved' by the pupil himself, and most examples in which mistakes have been made should be 'got right'. It is important that pupils should establish the habit of forming approximations to the probable answer to any mathematical question. In dealing with decimals such a habit is essential. Revision should be applied not only to recent, but also to remote work; for example, even in the upper school the dust should not be allowed to lie thick upon the multiplication table.

CHAPTER XIX

HISTORY AND CIVICS

The Purpose of Teaching History

THE inclusion of history in the school curriculum is due to the high esteem in which mankind has always held the knowledge of the past. Even the most primitive tribe attempts to perpetuate such knowledge in its legends, rites and ceremonies. Without knowledge of the past man would be working almost entirely in the dark, for the past of the race is to it what the past of an individual is to him, the explanation of the present and the indication of the future. Nothing can be known intelligently apart from its history; even a new machine is but imperfectly explicable apart from the story of its invention and development. Hence history must be taught if children are to understand anything of the institutions, trade, social and international relationships, arts, sciences and collective actions of the community to which they belong.

History as a Pageant

To young children history should be unfolded as a kind of pageant of interesting figures. They should learn to form mental pictures of their ancestors and of some of their characteristic and important doings. At the same time, it is often forgotten that the images of the past should be so reproduced in the minds of the pupils as to give them an insight into the present. It is clear also that since a positive training is better than a negative, and since also the images of misdeeds may persist apart from the consciousness that they are misdeeds, the better and nobler aspects of historical actions should receive more emphasis than the meaner and baser. The teacher's concern is not merely with national history, but with the even grander and more splendid story of human trial and endeavour. He stands in need of such qualities as sympathy, tolerance and breadth of outlook.

Avoiding jingoistic complacency, he should acknowledge the fundamental identity of human nature, under all conditions, and should reveal the most dramatic and intelligible incidents that distinguish the mighty epic of social strife, co-operation and growth. A good teacher will do much to satisfy the children's imagination, love of action, and sense of romance. Songs, readings, manual work and dramatization in this become his allies. The children will soon people the past with many noble and diversified characters, chapters from whose lives have become very real in their eyes.

Aids to the Teaching of History

The teaching of history may be made vivid by the use of aids of several kinds. Well-known anecdotes should be introduced in order to enrich and to diversify the lesson, although whenever the authenticity of an anecdote is doubtful, this fact should be mentioned to the pupils. Biographies should be read and told; they have a dramatic unity which cannot be approached by an ordinary text-book. Think of the enormous influence which Plutarch's *Lives* have exercised! Passages from historical novels may be read to the class; if old enough the pupils should be encouraged to read for themselves. Contemporary ballads are of service whenever they can be had; and modern poems depicting historical incidents may be sparingly introduced into a lesson. It is of great importance to quote short extracts from contemporary documents that fall within the range of the pupils' apprehension; for example, when chivalry is under discussion, extracts from Froissart may be read. Maps and blackboard sketches should be given a place in practically every lesson. Great use may be made of pictures; for example, a good picture of a medieval castle is almost indispensable to an understanding of the period to which such castles belonged. Time-charts, if drawn to scale, and not overcrowded with dates, are a useful means of developing historical perspective. It is an interesting exercise for children to dress dolls in the costumes proper to a period. Models of historical objects are sometimes made in

the manual workshop; and attention may well be paid to the manifold possibilities of correlation between the work of the class in history and its work in the subjects of English and music.

On suitable occasions, historical teaching may be adapted to the celebration of certain days which are maintained as national festivals or as commemorations of heroes. The best kind of celebration, whenever it can be arranged, is some act of service to the community. To clear the weeds from a public monument has a more definite relation to moral conduct than to listen to a speech. This does not mean that exhortation should be eliminated. When accompanied by stories, it provokes a human interest that may lead to the formation of high moral aims; but even these will be ineffective unless they find an outlet in action.

Civic and Moral Training

That moral training is one important function of the teaching of history is generally conceded. Noble examples will be emphasized. Such a story as that of Edward III and the burghers of Calais gives the children a marvellous opportunity of appreciating lofty qualities of mind and heart, qualities with which they often proceed to endow themselves in their own imaginings. This is surely much better than to stock their minds with base and unworthy images.

Whether in connection with history or separately, systematic instruction should be provided in social and civic relations. Many of these relations will be entered into by the pupil at school, so that they cannot but have an immediate bearing upon his conduct. Such relations include those which he has with the teacher and with his schoolfellows, as well as greetings, politeness, cleanliness, neatness and other desirable personal habits, correct forms of address, regard for the feelings of other persons and of animals, proper deportment in and out of school, regard for the rights and the property of others, and the formation of practical or moral standards such as 'playing the game'.

In about his fourth year of school, however, the pupil should begin to look forward to larger political and social interests. He should now become interested in the name and development of his township or village, its chief buildings and institutions, and what they stand for, the functions of the policeman, the postman, the doctor and other public figures, the supply of plants, flowers and books to the school, how sick scholars are faring, what red-letter days the school or the township may desire to celebrate. In another year's time he may be studying how his country is governed, the rights and duties of its citizens, and how they came to be won or acknowledged, the constitution and functions of the municipal or shire council, the way his township is laid out, and in general how its institutions are conducted. These matters may be easily overlooked; but few teachers will deny them a rightful place in the primary-school course. Before a pupil leaves school, he should have learned something of the administration of public health, education, natural resources, industrial legislation, the system of defence, administration of justice, taxation, local and national government, water supply and other local services by which he is assisted and enmeshed. All this work should be as practical as possible; the municipal council may be visited and an income-tax return filled in—

Shades of the prison-house begin to close
Upon the growing boy,

but the ultimate object is to reveal to him the light of civilization 'and whence it flows'. After all, he is the citizen of no mean city.

Scope of Historical Teaching

History is concerned with knowledge of the past, but the teacher of the subject is faced at once by the question, what part of the past shall be studied? At one time it was held that all the history that should be attempted in the elementary school, apart from the Scriptures, is the political history of the nation; but this simple solution of the problem is now

considered to be quite inadequate. History in the primary school should be neither purely political nor purely national. To the political aspects of the past with which the pupil must become acquainted are to be added the physical, economic, social, artistic, intellectual and moral aspects. To a knowledge of his own country should be added a general idea of the development of civilization, and even a fragmentary acquaintance with great events in other countries and with the biographies of famous men.

In making his selection of the matter to be studied by his pupils, the teacher should be guided by three principles, interest, proportion and continuity. In the elementary school, the most important of these is interest. No school-child can see the past in proper perspective and due relation between its parts; but many may become so interested in history as to read historical narrative and biography at intervals for the rest of their lives.

Progress with Age and Class

It may be assumed that in the first two years at school the pupil will be told legendary and historical tales of a kind that may prepare him for the work to come. Let him, for example, hear, repeat and act well-known stories of Ulysses, Alexander the Great, Julius Caesar, Alfred the Great, and Christopher Columbus. In the third year he may study biography much more systematically, paying particular attention to the characters of his own national history, but by no means excluding from his attention such lives as those of Michelangelo, Frederick the Great, and Napoleon Buonaparte. In recent years there has been a strong reaction against the tendency to emphasize the heroes of war and their achievements; and while it were as easy to deny the place of strife in evolution as to disregard the place of war in human history, yet there is much to be said for turning the attention of pupils in larger measure to more pacific themes. Certainly the horrors which mar the canvas of history should be

relieved by the introduction of peaceful figures such as those of Francis of Assisi and George Stephenson.

In the upper part of the primary school, the pupil is apt to confine his attention to his own country. At every opportunity, however, his attention should be called to the main events of European history. Such occasions will arise frequently, for the history of one country is inevitably linked with that of its neighbours. Moreover, the social monuments that were erected in any given period should receive adequate attention—cathedrals, castles, colleges, homes, ships, amusements, industries, and commerce. As much attention should be paid to the lives of the peasants as to those of the other classes in the community. Important phases of the national life should be selected for continuous and systematic treatment; for example, the growth of civic freedom, the manorial system, the guilds, the development of production and trade, colonial expansion, extension of the franchise, and religious toleration.

In the lower school, the teaching of history should be devoted chiefly to the cultivation of historical imagination; while in the upper grades, it should aim at historical understanding. The teacher of younger pupils should endeavour, by the use of vivid narrative, pictures, maps, models, and other forms of illustration, to assist pupils to image for themselves as much of the grand pageant of the past as may best be presented without haste or incoherence. There is no reason why the imagination should not continue to be employed at all stages of the study of history; but it is more essential, for example, that a portrait of Queen Elizabeth should be shown to a lower than to an upper class. In the upper part of the school, however, the teacher will concentrate his attention not upon recalling the images of people, things and events, but upon establishing relations of cause and effect. Such relations, which are the characteristic interest of science in general, cannot be neglected even in primary work, especially as a large proportion of primary-school pupils will never reach the secondary stage of schooling.

History as a Science

In the upper school, if the strictly scientific standpoint is adhered to, only what has a bearing upon relations of cause and effect is relevant to the subject of history. Scientific history is unconcerned either with the dramatic or with the picturesque as such. Shakespearian history may be regarded as valid for the younger classes only. Shakespeare could afford to treat King John without Magna Charta; not so the teacher, for whom Magna Charta, not King John, represents the central problem. Nor does scientific history concern itself overmuch with moral judgments, which are frequently affected by political bias, and are rarely seen to be made on scientific grounds. Broad theories are of interest; but their scientific value will depend upon the extent to which they have been well grounded and rigidly tested. The scientific teacher of history dwells less upon the beauty, the emotion, or the goodness of the past, aspects proper for emphasis in the lower classes of the school, than upon the way in which certain causes have led to certain results. His aim is not to develop the imagination, the feelings or the self-righteousness of his pupils but to augment their interpretative power.

The Content of History

In the upper part of the elementary school, the pupils may be led to form a clear idea of what history as a science comprehends. The historian studies the past life of man, considered not as an animal, nor as a mere series of individuals, but as a member of society. The pupil is not a historian; but he may know how historians get their results. Obviously it is impossible for historians to observe the past, which is their material, directly. Neither can they experiment with it. Thus historians are at a great disadvantage as compared with physical scientists, or even with sociologists or psychologists. Their materials are drawn chiefly from narratives, documents, literary and archaeological remains. Nor can any historian be a master of the whole of the material that he uses. To some extent he must take upon

trust the results of philology, palaeography, diplomatics, epigraphy, numismatics, archaeology, chronology, and historical geography. For all this his work is scientific, because in his search for truth he employs none but critical and thorough methods, and because the results that he reaches are reasonably accurate, if not as perfect and exact as those of the mathematical sciences.

Inductive Methods Applied to the Teaching of History

The point of view to be adopted with the more advanced pupils, then, is that of science. The truth is to be sought wherever it may be found. In this great quest the method to be adopted is that of reasoning. With the upper elementary classes both inductive and deductive inference may be practised, firstly in drawing conclusions from passages of source material, and secondly in discovering relations of cause and effect in connection with the events narrated by the teacher or described in the text-book.

In the opinion of the writer, canons of induction such as were drawn up by John Stuart Mill may be profitably employed in the teaching of history, notwithstanding the fact that the experimental methods which appear to have been contemplated by Mill are here impossible of application. For example, let the methods of agreement, difference, concomitant variations and residues be applied to the historical problem of the causes of the Renaissance.

1. Having prepared a chapter upon the Italian Renaissance, the pupils will mention the various events and conditions which may have contributed towards the movement—the invention of gunpowder, invention of printing, geographical discoveries, genius of the people, rise of despotism in the Italian cities, recovery of classical manuscripts, development of art and literature, fall of Constantinople.

2. The method of agreement is applied. Was the Renaissance felt wherever gunpowder was known, wherever printing was practised, etc.? A few of the alleged 'causes', such

as the discovery of gunpowder, geographical discovery, and the recovery of classical manuscripts, may be thus eliminated; but the results remain inconclusive. It may be seen, however, that all the countries in which the Renaissance had repercussions participated in the use of printing, in the rich endowment of individual genius, in the institution of despotic government, in the development of art and literature, and in the resultant influences of the fall of Constantinople. It is probable, therefore, that some of these conditions had to do with the causes of the movement.

3. The method of difference is applied. Can two countries be found, one with and one without a Renaissance, differing in the main conditions and events of their history only in certain limited respects? If so, then we have an important clue to the cause of the Renaissance. It is not possible to find two such European countries. Yet a comparison between the history of Italy and of Germany will be found instructive. The northern Renaissance sprang from the Italian; and there was a Renaissance in Italy before there was one in Germany. At the time, the significant differences lay not in the knowledge of printing, which existed in Germany before it reached Italy, nor in the recovery of classical manuscripts, a process which was associated almost as closely with the one country as with the other. The differences lay rather in the natural genius of the people, in the personal despotism which had arisen in Italy while in Germany the feudal system remained comparatively intact, in the development of art and literature, and possibly in the time at which Greek scholars from Constantinople made their appearance in the respective countries.

4. The method of concomitant variations is applied. Did the Renaissance in the various countries of western Europe vary according to the genius of the people? Yes. Did it vary in accordance with the degree to which government had become non-feudal, centralized and despotic? The answer, after investigation, will probably be a qualified affirmative rather than a negative. Did it vary according to the period at which Greek scholars from Constantinople began to make

their learning felt in the West? Not altogether, since Dante wrote without any Greek stimulus, and Petrarch with but little. As for art and literature, they appear to depend in the main upon genius, which has survived the application of all the canons of inductive inference in so far as the present inquiry is concerned.

5. The method of residues is applied, in order that the pupils may discover whether the conditions still remaining after the various inductive tests have been applied, namely, native Italian genius and Italian non-feudal despotism, are to be regarded as dual causes of the Renaissance, or whether one of these conditions comprises the whole cause. In the Renaissance, how much is accounted for by natural genius? The following characteristics at least may be explained on this ground—a new note in art and literature, perhaps even a new spirit of investigation, and an assertion of the right to think. But the Renaissance meant more than this. It meant that classicism became the fashion, and that the humanists of the period found profit in learning, literature, art and diplomacy. Native genius does not account for all this. On the other hand, the personal despotism of tyrants does account for precisely these residual conditions. To secure their usurped thrones, to defend and to camouflage their own characters, to establish their reputation among other States, and to gratify their own tastes and inclinations, the tyrants vied with one another in attracting humanists to their courts, and in encouraging poets, artists, and other men of genius who might create works of art in which their patrons' names should be enshrined.

As a matter of inductive inference, it would thus appear that the main causes of the Italian Renaissance were—firstly, the native genius of the people; and secondly, the foundation of centralized despotism upon the ruins of the feudal system in Italy. It may be objected that few lessons in history can be expected to proceed from beginning to end in a form that would be convenient for the application of Mill's methods of induction. This is true, but the better a teacher knows his

subject, and the greater the attention that he pays to the technique of teaching it, the larger will be the number of lessons that he may be disposed to treat somewhat after this manner.

Interpretation of Source-Material

All pupils who are old enough should be trained to appreciate relations between cause and effect; but their natural ability in this direction will vary to no small extent. There are many pupils who can understand causal relations when these have been explained to them, and a more limited number who are able to develop sufficient historical power to establish causal relations for themselves. The power to establish causal connections for oneself is, however, a matter of degree, so that it is necessary for the teacher of history to give practice in this direction, as well as practice in comprehending relations already established, to all his pupils. How this may be done has been copiously illustrated by Keatinge, in his *Studies in the Teaching of History*.

The following extract, with the questions (a), (b) and (c) attached, was submitted by the present writer to thirteen-year-old pupils:

After this the king had a great consultation, and spoke very deeply with his Witan concerning this land, how it was held, and what were its tenantry. He then sent his men all over England, into every shire, and caused them to ascertain how many hundred hides of land it contained, and what lands the king possessed therein; what cattle there were in the several counties, and how much revenue he ought to receive yearly from each. He also caused them to write down how much land belonged to his archbishops, his abbots, and his earls, and, that I may be brief, what property every inhabitant of all England possessed in land or in cattle, and how much money this was worth. So very narrowly did he cause the survey to be made, that there was not a single hide nor a rood of land, nor—it is shameful to relate that which he thought no shame to do—was there an ox, or a cow, or a pig passed by, and that was not set down in the accounts, and then all these writings were brought to him.

(a) From reading this passage, what do you conclude about the writer?

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(b) What do you conclude about the king's reasons for making the survey?

(c) Date the passage as nearly as you can.

The following answers were among the best received:

1

(a) The writer of the passage was probably, since he is so conversant with the details of the survey, a member of either the Witan or the surveying party. Since he also seems indignant at the minute and careful inquiry into the possessions of the landed class, one might conclude that he was a sufferer in the process.

(b) The king was undoubtedly short of funds if he took such a degree of care and trouble to ascertain the exact number of possessions his subjects had, and undertook the business most probably in order to ascertain by how much he would be able to increase the burden of taxation.

(c) He must also have possessed enormous power and influence over his subjects to be enabled to undertake the survey without active resistance from them. This draws the conclusion that the monarch was William I or his immediate successors, Henry I or Henry II, who alone could have undertaken the business with sufficient determination. In any case, the Witan did not exist after the Plantagenet period, so we are forced to conclude that it was the Conqueror himself who instituted the survey in preparation for the Domesday Book about 1070.

2

This passage refers to the account of all the property in England which William the Conqueror had drawn up, and which was called the Domesday Book. Its date is between 1066-1070.

It is evident that the writer was an Anglo-Saxon, and disapproved of William's policy, and considered it beneath his dignity of a king to inquire about the private property of every individual.

The reasons that caused William to make this survey were: (1) The king had no settled revenue, like that which he receives now, and depended upon the income derived from his own private possessions, and from the taxes that he levied; it would therefore be necessary that he see that he lost nothing of what was due to him, as even at best his income was insufficient for his needs; (2) William I was a complete stranger to England, and had no idea as to its wealth or resources. It was necessary that he should know, so that he might know to what amount he could levy taxes.

These answers, although they may manifest certain imperfections of fact, of logic and of expression, may serve to

illustrate the fact that the reasoning power of the older pupils is sufficient to justify exercises of this kind, which are, indeed, absorbingly interesting. It would not be unreasonable to suppose that a class which had been trained to such tests, as this class had not, would be able to do work of a correspondingly superior order.

Suggestions to Teachers

In the Board of Education's *Handbook of Suggestions for Teachers*, advice to the following effect is offered. Care must be taken that the matter of instruction shall be comprehensible to the pupils, hence the details of statutes and other abstract considerations should be touched upon more lightly, perhaps, than their intrinsic importance warrants. The principle of continuity must be carefully preserved, large periods being treated not merely in their details, but as wholes. The course of instruction may vary within limits, according to local needs. It will be necessary for the teacher to have read some of the large standard histories, some good modern works and some outstanding specimens of the literature of each period with which he has to deal. It is from the literature of a period that the sense of reality and vividness is derived. 'It would be easy for children to learn from Froissart how the English prepared for Poitiers, or from Hakluyt how the survivors saw Sir Humphrey Gilbert die, or from Raleigh how the *Revenge* fought, or from Pepys how he heard the Dutch guns in the Medway.' In this connection the writer ventures to submit that in no subject is the teacher's own knowledge more vital to success than in history. Without deep learning and wide culture he may cut but a sorry figure in teaching it. Even the text-books to be placed in the hands of the children should be products of genuine scholarship, although the standard histories are generally too hard to be studied directly by primary pupils. The teacher should have some good history books himself; but others may be borrowed from a public library or added to the library of the school.

As touching the subject-matter of history, it is suggested that the temptation to cover too much ground should be steadfastly resisted. The teacher is concerned primarily with the pupil's point of view, and with his desire for further reading and study. He will first ask himself, 'What cannot I leave out?' and then 'What can I leave out?' His problem is how to cover a wide range of time, without excluding interesting details and illustrations. A mere bald narrative is insufficient to hold the interest of children. It is necessary that the material selected for treatment should be at once valuable and intelligible; but any course that totally excludes either ancient history, world history or the modern trend towards international co-operation will convey but a poor and lame idea of the broad history of humanity. History should be related closely to geography; for historical associations lend interest to geographical ideas, while geographical knowledge adds definiteness to historical concepts.

The general methods of teaching history still remain partly in a state of flux. Since proficiency in this branch of the pedagogic art depends to a marked extent upon scholarship in the subject itself, it is a distinct advantage if the staff of a school should contain one member who specializes in history. In some schools, history is taught on the 'concentric' plan, the same period being covered more than once in different years, each time more intensively. This method of treatment is only likely to be successful when the whole of the staff of the school co-operates enthusiastically in it. In most schools the 'periodic' plan is preferred, a different period being treated each year. It is important that whatever history is taught should come down to the present time, the right interpretation of current problems being the main justification of this branch of the curriculum. It is equally important that the pupils should study history directly. They should not rely entirely upon the teacher's exposition, however comprehensive or inspiring that exposition may be. 'A series of oral lessons, however brilliant and entertaining, cannot be expected to be more than evanescent, unless it is supported by

solid study on the part of the pupil; nor can any devices, however ingenious and attractive, be made an efficient substitute for hard work.' The more advanced pupils will make systematic summaries of chapters for their note-books, in which also may be entered maps, pictures, and sketches. The note-books should be used systematically in connection with revision. From time to time, written answers to questions should be required. A reasonable knowledge of dates is essential to the grasp of historical sequence; and a simple time-chart should be constructed as an aid to chronological learning and as a means of establishing a sense of proportion. The recent tendency to disparage an exact knowledge of the succession of kings and queens is to be deprecated, for their personality has often been the key to the governance of England. Neither should simple tables of genealogy be altogether neglected. Among valuable illustrations to the teaching of history are pictures, vivid descriptions by good writers, historical fiction, music and song. The moral lessons of history should be skilfully though not obtrusively brought into relief in the course of the presentation of the subject as a living story of the chequered careers and the good or bad deeds, both of individuals and of social groups.

'By the soul

Only, the nations shall be great and free.'

CHAPTER XX

GEOGRAPHY

The Principles of Geographical Teaching

ABOVE all else, elementary geography should give an account of the conditions under which the various communities into which the world is divided live. Such an account ought to be at once useful and interesting. Just as in the picture of 'The Boyhood of Raleigh', by Sir John Millais, the lad listens entranced to the tales of an adventurer from the Spanish Main, so should the more ardent members of the class be inspired with wonder and enthusiasm by the charm and freshness of the teacher's presentation of scenes from other lands. The best teacher is generally one who has travelled, or one who feels the urge to travel. Such a teacher can not only give information, but can implant in the minds of his pupils a desire for more. On the other hand, in the clumsy hands of an unenlightened teacher, 'geography' may be reduced to little more than the memorization of an enormous number of almost unrelated facts. Geography is not saved from such an abuse, as history is saved, by the necessity of respecting the order of time. In geography an unlimited number of facts is staring the pupil relentlessly in the face, and if the subject is to present any aspect of unity, continuity and development, the teacher will have to use his best endeavours to systematize it. By every means that he can devise, he must attract the interest of his pupils, so that the natural unity of their outlook may enable them to organize the information as it is gained. For the most part, he may leave to his pupils the collection of facts, helping them by means of questions, suggestions, summaries, comparisons, and illustrations to reduce these facts to an orderly and coherent system. Some enthusiasm is necessary, but the zeal of a keen teacher never fails to elicit a response on the part of his pupils.

Materials of Study

With the whole world to choose from, the teacher of geography may well look round for fixed principles in the light of which his materials may be selected. *Utility* is such a principle; for example, it is of greater use to most people to know what articles a country exports than to be cognizant of the composition of its rocks. For this reason the products of a country are taught more thoroughly than its geological formation. *Relation to the interests of the pupils* is another relevant principle; hence the polar regions, because of their strange and unaccustomed character, adventurous associations, and bizarre contrasts with more familiar latitudes, are likely to receive more attention than would otherwise be their due. *Action* is a third principle; other things being equal, those materials with which the pupils can do something are preferable to those materials which they can only read or observe. But whatever other principles a teacher may have in mind, he cannot afford to neglect the obligation which rests upon him to see that his pupils know something worth while about their own country, about the world at large, and about physical geography.

Domestic Geography

To an imaginative child the geography of his native land is apt to be less fascinating than that of countries that are strange, remote, and to his mind romantic. He prefers lions to cats or dogs, zebras to horses, palm-trees to oaks, coconuts to apples, and head-hunters to shopkeepers. But there is one way in which the more familiar concepts may be made intensely interesting, that is by doing something in which they are closely involved. Induce the children to construct in the playground a relief map of their home country, and they will soon obtain an accurate idea of its mountain ranges and river valleys. Rousseau pointed out that the study of geography should begin with what is near at hand, the home, the neighbouring fields, the local village, the hills and the woods of the child's immediate environment. The best way to enter

upon such a preliminary study is to undertake various pointed and purposeful actions, such as walking to a convenient eminence in order to study the landscape, measuring certain directions and distances, noting salient features, and making in the sand a model of the locality, on which may be shown every hill, valley, stream, cliff, village, homestead and forest. In the construction of such a model, bits of glass, pebbles, pieces of wood and twigs may be freely and artistically employed. Even when the circle has to widen, so that aspects of national geography may be studied that are not within the direct experience of the children, it is advisable to adopt a system by which the children shall construct a map in the playground or in the classroom on which they can place miniature ships and scraps of china, glass, woollen material, metals, coal, etc., at points representing the centres of the industries thus symbolized. Throughout the course in geography, it is advisable to find concrete actions for the children to perform.

Foreign Geography

When foreign countries are to be studied, the pupils should be induced to feel the lure of travel. For the majority, foreign travel may have to remain a dream, an aspiration, an ideal; but it is one that can be realized if not in the flesh, yet in the spirit. In these days, the cinematograph, aviation and wireless telegraphy have been able to supplement books and intercourse so effectively that a great part of the joy of travel may be had without actually going abroad. Some of this fresh and fragrant joy should be experienced by pupils in the 'geography' period. In imagination, the teacher should take his class with him on distant ocean voyages and long land journeys. He should make known in advance what are the proposed scenes of each projected excursion, calling for volunteers who will undertake to bring for the occasion suitable photographs or other illustrations. In addition, reading-books, maps, objects and diagrams should be freely introduced, and many interesting comparisons may be instituted. When it has been carefully and intelligently prepared,

a lesson in geography becomes as delightful as it is informative.

Physical Geography

Apart from the familiar division of the world into countries, which must be regarded as partly a natural and partly an arbitrary form of human organization, the physical features of the earth's surface should be intelligently comprehended. Physical geography presents many difficulties even to the qualified scientist. The last word on such subjects as tides, oceanic currents, winds, coral islands, volcanic action, the interior of the earth, the formation and relations of the heavenly bodies, and many other familiar concepts of the kind is far from having been said. Models and diagrams are more essential to the teaching of physical geography than to that of the other branches of the subject. By making individual models or by constructing a co-operative model, young children soon gain a clear notion of what is meant by mountain-range, river, lake, plain, gorge and ocean; but such notions as those of climate, trade-winds, tides, the alternation of day and night, the procession of the seasons, volcanic action, and oceanic currents are unlikely to be intelligible except to the brighter pupils.

Participation by the Pupils

In a subject like mathematics, up to a certain point practically everything is learned, and nothing omitted. It follows that neither the teacher nor the pupil has much voice in determining what shall be studied. But in geography, no attempt can be made to learn everything; and since a selection has to be made, it is often well to leave the pupil himself to make it. Once he has become thoroughly interested, he may be permitted to learn very much what he likes. Certain common facts are taught to all; but others should be read and learned by members of the class individually. In order that this process may be facilitated, an adequate supply of reading matter is necessary. According to one official *Course of Instruction*:

'The central idea being that the treatment should be so stimulating that the pupils will desire personally to pursue the subject, appropriate material should be available in sufficient quantity. Such provision should not be impossible even in the smallest and most remote schools. The abundance of suitable literature provided in books of travel, text-books, special readers, magazines, newspapers, etc., is inexhaustible, and it only requires the right organizing spirit to bring a sufficiency of it to any school. Once admitted it should be duly classified and every measure taken to ensure its careful preservation.'

An aura of freshness and recency clings to current articles in the daily newspaper or the monthly magazine, and to pictures in illustrated journals. The regular use of such materials will give to the geographical instruction a stimulating sense of realism that nothing else is able to convey. But it is important that the pupils themselves should collect and explain most of these illustrations of their studies. According to the *Course of Instruction* quoted above, 'The passive reception of information tends to kill interest, while activity in its acquirement increases it. For this reason, emphasis is laid on planning, modelling, sketching, collecting, recording, reading, and inquiring.' If a map is to be constructed in the playground, it may be made by the pupils themselves under the teacher's supervision. On such a map, various routes or other details may be shown, while use can be made of them, and afterwards may be obliterated. The pupils should attend to the rain-gauge and keep records of wind and weather. Dramatization may be introduced, and not only types of people, but towns, and even mountains, rivers, and other natural features may be personified for purposes of dramatic representation. One child taking the part of a Chinese may discuss with another who is enacting the part of a Japanese some of the geographical features and national problems of the countries to which they are assumed to belong.

The Dalton Plan

Although the Dalton plan is connected no more intimately with geography than with other subjects of the school curriculum, this is a convenient place in which to examine it.

The Dalton plan originated with Miss Parkhurst at Dalton, New York, and although it is better suited to the needs of a secondary than to those of a primary school, may readily be adapted to the needs of the upper classes of the latter. The principle underlying the plan is that of individual work. The plan enables the teacher, even of a large class, to be a helper, not a driver; the pursued, not the pursuer. It makes none of the false assumptions that were common to the older forms of collective teaching, that children advance scholastically at the same rate, and that all are interested at the same time in the same thing. It may be added that the plan entails no change in the course of study, no expensive equipment, no uniformity of method. Neither does it involve any loss of thoroughness. It provides equal opportunities to all pupils to advance each at his own rate.

The Dalton plan provides a laboratory for each subject, the laboratory being a classroom devoted to a special subject. Thus if a pupil becomes fatigued at his task, or when he has finished it, he is at liberty to move to another room, where another subject has its home. The system is one of specialized classrooms and of specialized teachers. The usual plan of classification is in age-groups, 9-10, 10-11, 11-12, 12-13, and 13-14. As each pupil may work at his own rate, subject to reasonable vigilance against shirking, the classification is not a matter of such moment as under other systems.

Under the Dalton plan the year's work, or 'contract', is divided into ten parts known as 'assignments', each assignment representing a month's work. A week's work is known as a 'period'; a day's as a 'unit'. These names are subject to local variation. In Mr. Lynch's school at Tottenham, at the time of the writer's visit, the subjects were grouped as Written English (Language, Composition, and Grammar), Literature, Mathematics, Geography, History, and Drawing (including practical drawing, and, for the sake of convenience, elementary science). The time to be allotted to each subject was set out. Mr. Lynch estimated that of the $27\frac{1}{2}$ hours of the school working week, $7\frac{1}{2}$ should be given to Scripture, massed

Singing and Drill, Recess and Registration; and five hours to one oral lesson in each subject except written English. Thus there remain three hours a day, or fifteen a week, for free or individual study. It will be noticed that this constitutes more than half the pupil's school time. The fifteen hours were divided at West Green School as follows:—English 5, Literature 4, Mathematics 3, Geography 1, History 1, Drawing and Science 1.

An Assignment in Geography

Much importance is attached to the assignments. As it is impossible to draw up a different assignment for each child, some instructors use the same assignment for a whole age-group, while others have three, a junior, an intermediate, and an advanced assignment. The following is a detailed assignment in Geography, the pupils being of age 11-12.

WEST GREEN SCHOOL, TOTTENHAM

GEOGRAPHY. CONTRACT I

Ninth Assignment

First Period. (British Isles)

We are going to leave the southern part of the world which we have been talking about in the previous eight assignments and take a look at our own islands for a little while. We shall only have time to look quickly at the many interesting things to be found at home. You have seen how we have dealt with other countries such as New Zealand, Australia, and Africa. Now I want you to deal similarly with the British Isles as far as possible yourself.

Look for a few minutes at the position of our islands. What hemisphere are they in—north or south? Now look at a map of the 'land hemisphere' of the world (there is one in most atlases), and notice the central position of the British Isles amongst the great land masses of the world. You will then see what a favourable position for trade this is. Pick out some convenient latitude line such as 50 degrees passing through the south of England or 60 degrees near the north of Scotland and then reckon the distance from the Equator and from the North Pole. (One unit.)

Which are our islands nearer to—the North Pole or the Equator? Will this have any effect on our climate—if so, what effect?

There is one other point about the position I want you to notice

and that is the nearness to the Continent—about twenty miles or one hour's journey by boat divides us from the land on the other side of the Strait of Dover. You will see later what effect this has on our climate. (One unit.)

I want you next to spend a little time on the climate. You will want the wall map for this and the help of the book called *Europe and Britain*. You will need to study the winds, temperature and rainfall, so read *Europe and Britain*, pp. 150-160. From this you will get a good idea of the reasons for our 'maritime' type of climate, you will see what influence the Gulf Stream has on our weather, also the part that cyclones and anticyclones play in our rainfall. Or

Read *Self Help Geography. The British Isles*, pp. 18-23. (Two units.)

Do Ex. 3, p. 168, of *Europe and Britain*, or try the following:

The average monthly temperatures of London and Valentia are:

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
London—	38	39	39	45	49	55	58	57	54	47	44	40
Valentia—	45	45	46	49	53	56	59	59	57	52	47	46

Draw graphs and compare the rise and fall of temperatures at these two places. (One unit.)

Second Period

Continue the climate of the British Isles by copying the map on p. 157 of *Europe and Britain*, and write the description in each quadrant found on the bottom of page 154 of the same book. Or

Draw a map of the British Isles and mark in the January Isotherm 40 degrees, and the July Isotherm 60 degrees. You will notice that these cross in such a way as to divide the land into four divisions—N.W., S.W., N.E., S.E. Now the climates of these four divisions differ slightly. Find out the most important points about the climate of each and write them in their respective divisions on the map you have drawn. (Two units.)

You should now be able to answer these questions:

1. Which wind blows mostly over the British Isles?
2. Which is the wettest part of the British Isles?
Why?
3. Which is the driest part of the British Isles?
Why?
4. What influence has the Gulf Stream on our climate and when do we feel the benefit of that influence most?
5. Why is the eastern side of the British Isles, generally speaking, colder than the western in winter? (Three units.)

Third Period

You are going to find out something about the surface of our islands this period. Get your contour map, have a good look at it and make up your mind where the highest and where the lowest land is. Be able to point the Highlands and the Lowlands of Scotland, the Pennine Chain, and the Welsh Mountains; also some of the lower ranges such as North and South Downs, Cotswold, Chilterns, the Donegal, Antrim and Wicklow Mountains, and any others. (One unit.)

In *Europe and Britain*, pp. 160-167, there is a good chapter on the relief of our islands. Read it. Or

The British Isles, pp. 22-29, on 'The Pennine Moorlands'. Or

The British Isles, pp. 60-69, on 'Way to Scotland—The Highlands'. Or

The British Isles, pp. 111-130, on 'Lowlands of England and Scotland'. (Two units.) I should like you to make a section across the Pennine Chain, from Liverpool to Hull, or copy the section given on p. 161 of *Europe and Britain*, or copy the section given on p. 97 of *Commercial Geography of the British Isles*. (Two units.)

Fourth Period

There is a very good section across the London basin on p. 164 of *Europe and Britain*. Notice how London lies on a bed of clay, underneath which is a thick layer of chalk coming to the surface in the Chiltern Hills and North Downs. Make a copy of this. (Two units.)

Now let us look at our map again and this time notice the seas around our shores. Are they shallow or deep? I want you to get hold of the name Continental Shelf given to the large flat stretch of sea floor on which our British Isles lie. If you read *Europe and Britain* from the bottom of p. 165 you will find out what has happened and is still slowly going on in the north-west corner of Europe. You should try to picture what the result would be if the floor of this shelf around us were raised 600 feet. Suppose, on the other hand, it sank 600 feet and the British Isles went with it. Look at your contour map and see how much of our islands would be left above the water. I should like you to copy the map on p. 166 of *Europe and Britain*, showing this Continental Shelf, or make a map (from your atlas or wall map) of the north-west corner of Europe showing particularly the Continental Shelf on which our islands lie. (Two units.)

It will be nice to finish this period by considering one of the best friends our islands have—that is the tides. I am certain that somewhere, either at the seaside or riverside—you have seen the beach or river-bed nearly empty of water: but a few hours later full almost to overflowing. This rising and falling of the water level, this filling and

emptying of the beach and river is called the tide. The water flows first in one direction and then in the other direction. Now when you have read *Europe and Britain*, p. 167, you will be able to answer this question. Or read *Essentials of World Geography for Junior Students*, pp. 131-132, on Tides, or read *In the Old World*, p. 160, second paragraph. Of what value are the tides around our shores to us? (One unit.)

Brief Examination of the Dalton Plan

The evidence of thoughtfulness and thoroughness in this assignment of one month's work in geography for one age-group is overwhelming. It represents hours of careful planning. Year by year, however, assignments tend to become more perfect; and it should not be assumed that each assignment must always grow out of nothing but the teacher's own inventiveness. Assignments will become to some extent standardized, though it is not likely or desirable that they should be stereotyped.

The Dalton plan cannot be carried out effectively unless accompanied by checking devices. Those recommended by Miss Parkhurst include, firstly, a scholar's graph card, nine inches by six, divided for weeks and days horizontally, and for subjects vertically. This card provides for the name, class, number of the assignment, its date of commencement and date of completion. Secondly, an instructor's graph containing all the names on the class register for the subject, and including all the information on the scholar's graph card. Thirdly, a house graph for purposes of competition. In place of the second and third, some may prefer, for elementary school purposes, a teacher's subject register for all classes, and a head master's record. The last shows the number of the assignment, the child's name, date of starting and of completion, days taken, order of finishing and days absent. The child takes his card, when signed in each subject by the responsible subject master, to the head master, who then makes the necessary entries in his own record.

Daltonists are convinced that the plan offers the following advantages: The child works at his own rate and at the sub-

ject he prefers at any given time; he learns instead of being instructed; is freer than under the old system; sees his job as a whole and understands something of its purpose. The plan avoids useless repetition, enables children of all grades to work in the subject room and to begin the new year's syllabus if and when they have finished the old. Discipline and home-work lose their terrors, the results are better than under the old system, subjects are readily co-ordinated through the nature of the assignments, teachers are only called upon to teach when the necessity arises, social training is imparted and economy of equipment assured. Certain limitations, however, appear in practice and are fully recognized. Large numbers present a difficulty in this as in all forms of education. The plan must be installed for some months before its good results become apparent, or at least before they are convincing. Backward children emerge into an unenviable prominence. Shirkers attempt to answer questions by 'bluff', instead of as the result of reading. Pupils have difficulty at first in realizing that extra time given to one subject is being taken from others; only gradually do they learn to divide their time economically.

Planning and reproducing the assignments is a heavy task. Text-books are too often unsuitable, and subject libraries need to be built up. Pupils consume more stationery, and have less vocal practice than under other systems.

If the Dalton plan has any serious limitation, it is that more foresight and more labour are required of the teacher than under other systems. The subject-teacher is continually engaged, either in preparing assignments or in marking written work. The written work, however, is marked in school in the presence of the pupil. The fact that the plan has been successful may be due as much to selection as to other causes. Only schools with energetic head masters and staffs attempt to put it into operation; and such schools would attain good results by any other plan which had enough novelty in it to arouse enthusiasm.

The Use of Illustrations

So important are illustrations to the subject of geography that this may be a convenient place at which to call attention to the principles which govern the use of illustrations generally. In geography, the illustrations most frequently used are extracts from books, articles from magazines, maps, diagrams, globes, the blackboard, pictures, posters and other advertising matter, lantern-slides, the cinematograph, excursions, postcards, stamps, anecdotes, dramatization, specimens and souvenirs. Without such aids geography can be but a doctrinaire and unreal pursuit.

Of any illustration it may be said, firstly, that it should be relevant to the material which is to be illustrated. There is a temptation to drag into a lesson by a *tour de force* any illustration that has been found effective in some other connection. This temptation must be resisted. A dressed doll interests children; but it does not follow that dressed dolls should be insinuated into all lessons. Neither is the teacher justified in using an illustration merely because it happens to be included in a collection which he has built up.

Secondly, the illustration should be subordinate to its object. The purpose of an illustration may be either to throw light upon a point which is relatively obscure, or to reinforce by fresh associations a point that has to be remembered. In either case, the illustration tends to be more attractive than the point to be illustrated. By virtue of superior attractiveness, it may easily divert attention from the very point upon which it is intended to throw light. Thus the working model of a locomotive engine may create such an impression upon the minds of pupils that they are completely distracted from the main points of a lesson on the railway system of their native land. The danger that an illustration may usurp the place of the point to be illustrated is diminished when several illustrations have been employed or when illustrations are added by the pupils to that which the teacher has given, or when the teacher takes care to make the connection of the illustration with the main point at issue abundantly clear.

Thirdly, the illustration should be easier of comprehension than the point illustrated. For this reason illustrations should be simple, direct and obvious, standing in need of little or no explanation themselves. Sometimes graphs or diagrams are submitted as illustrations which are far harder to comprehend than the idea which they are supposed to illumine. If worth teaching, such graphs or diagrams should have been submitted not as illustrations, but as subject-matter.

Fourthly, the illustration should be such as will be interesting to the pupils concerned. In this respect working models are particularly effective; it is a pity that they cannot more often be obtained. The writer has found pupils of upper elementary classes to be extremely interested in a working model of a steam-engine. But provided they are realistic, other types of illustration may be equally effective. A lesson to twelve-year-olds on the land forms of Asia leaped to life when photographs taken by members of an expedition to Mount Everest were submitted to close inspection by the class.

Fifthly, the illustration should be as appropriate, as exact, and as reliable as possible. In some history books, illustrations from medieval manuscripts are given, in which figures drawn without perspective, holding their heads at an absurd if not impossible angle, repel the pupils and give them a false impression of the standards of art, dress and customs of the period. The unsuitability of such illustrations may be diminished if an explanation is given of the circumstances under which they were drawn, the beauty of the original illuminations, and the spiritual character of the ideal which existed in the artist's mind. Pupils should learn to discriminate between pictures, etc., which may be regarded as reliable, and those which present little verisimilitude. Illustrations which represent gross improbabilities have no positive value. Lastly, it is important that concrete illustrations should be seen easily, and for a time sufficiently long for them to be comprehended and appreciated. Even verbal illustrations, such as anecdotes, should not be hurried; time must be allowed for a

point to 'sink in'. It is worse than useless to trot a picture round the class so rapidly that only the merest fleeting glimpse of it can be obtained.

Suggestions for Teachers

Among many helpful suggestions for the teaching of geography which have been issued by the Board of Education, the following may be briefly noticed. Children should become acquainted not only with a number of geographical facts, but with such of the principles of geography as they can understand. Incidentally, they should develop the habit of looking for reasons, and also that of seeking information for themselves to supplement that which has been laid before them. The time allotted to the subject of geography need not exceed one to one and a half hours a week; but this time should be supplemented by numerous connections which may be effected with geographical concepts in such other subjects as English, history, mathematics, nature study, and manual work. More ambitious courses than are required under an ordinary syllabus may be offered by those teachers who have studied modern scientific geography. Under any capable teacher, however, the older scholars will make good progress if they are encouraged to use books and atlases for themselves, to solve problems and to enter into discussions upon points of interest.

In the earliest stage, geography may concern itself with the natural and human environment of the school, with which the environment characteristic of other communities should be contrasted and compared. In the second stage, the geography of the world may be treated—how land and water are distributed, how climate and elevation are related, how countries are commercially and industrially connected, and what are the chief geographical features of the home country. In the third stage, a more thorough and systematic treatment of both the world as a whole and of the home country should be undertaken.

No longer does the teacher of geography begin with names and definitions; these may be introduced as the necessity for them arises. Neither does he at the outset undertake a detailed study of the local city and county, from which to proceed to a full treatment of the country as a whole. Rather does he begin with simple lessons about the world in which the children live. Lessons may be given about the life of children in other lands, or upon contrasting conditions of life such as are to be found in polar and in tropical regions, or upon the experiences of travellers and explorers, involving 'strange tales of flood and field', or upon instances of heroism that have been displayed in the face of great natural catastrophes and dangers. It is usually a mistake to give set lessons to children on 'such topics as mountains, rivers, lakes, the shape, size and motions of the earth—in fact, on the codified results of science'.

In the meantime there should be conversations on the neighbourhood in which the children live, and especially on the relations which exist between the neighbourhood and other parts. Products used in the locality should be traced to the scene of their production. The journeys of great pioneers like Magellan may be followed upon the surface of the globe, so that in a secondary sense the children may discover the world for themselves. In the upper classes, where the pupils learn from books, their reading should be guided according to a well-planned system. Many of the illustrations should be collected by the learners, such as articles and pictures from newspapers and magazines, and sometimes postcards and stamps. The pupils should learn to read maps carefully, note the latitude and longitude of important places, apply exact descriptions to climatic conditions, and trace commercial routes with exactness and care. Throughout the whole course the natural standard of comparison is the home country, a detailed knowledge of which should be obtained in the last year before leaving school.

CHAPTER XXI

NATURE STUDY

IT is axiomatic that the curriculum of the elementary or primary school should reflect the essentials of civilization. From this point of view, the course of study should be such as to put the pupils in possession of those great acquisitions and achievements of the race which are regarded as the main inheritance that society is under the obligation to hand on to each successive generation. Language, mathematics, history and geography represent such achievements; and so do nature study, hygiene, physical training, art, music, industry, and, in its corporate aspects, religion. Each plays its part as a subject in the curriculum of the elementary school, although in the writer's opinion industry is inadequately represented by manual work, even if commercial geography be thrown in as a make-weight. The subject of nature study must be regarded as the humble representative or herald in the primary curriculum of one of the greatest and most signal achievements of civilization, that is, physical science. In these pages the teaching of religion is not discussed, by no means because of any lack of appreciation of its great significance, but because the methods appropriate to religious teaching may readily be deduced from the treatment which has been accorded to the subjects of English, history and geography.

The Scope of Nature study

The term 'nature' is extremely ambiguous; but it is sufficient here to indicate that 'nature study' implies the study of nature, considered as an external phenomenon. Hence, human nature is not under consideration; neither is ideal nor 'better' nature. In practice, what is studied at school is mainly biology, with which the teacher of the subject should have more than a nodding acquaintance. But biology should not be taught to young children formally as such, for they are not

yet at the stage at which the exact methods of science, or its broad abstractions and generalizations, can be made intelligible and interesting. Hence, nature study is not a course in botany or in zoology. Rather it is the investigation of a number of problems which the children themselves may approach by means of simple and interesting exercises in observation, experiment and reasoning. Such problems arise in great variety from the manifold changes which accompany the procession of the seasons. It is the pupils that must study nature at first hand, not the teacher, who, although he may furnish them with suitable guidance and methods, should only supplement their work. To quote an official syllabus:

In a Nature Study course first hand knowledge on the part of the pupil is required at all stages. One of the aims of Nature Study is the cultivation of a habit of inquiry. This cannot be done by *telling* the child about the wonders of the world surrounding him, but by teaching him to discover some of them for himself. Let the child discover by observation and experiment that a plant is a living thing which grows, feeds, breathes, moves, and performs other vital functions, and then go on to discover how the form and structure help it to live its life. In doing this, the child is not only gaining a knowledge of his own environment, but also learning to appreciate beauty—the beauty of form, colour, and perfect fitness.

Methods of Nature Study

The methods by which children may be guided to a more intimate knowledge of nature are three. The first is *general observation*. Very young children are encouraged to talk about what they have seen—pets, wild birds and animals, plants and flowers. They discuss the flowers which are more commonly grown at home or at school, wild flowers, plants grown in the garden, favourite fruit trees, ornamental or shade trees, animals on the farm, wild animals to be found in the neighbourhood, birds that are present for the time being, those that come with the spring, those that depart on the advent of winter, what birds are most common, insect life, whether injurious or beneficial. Even at this stage, a few seeds are grown, and specimens of flowers, fruits and plants are brought to school, or are taken home for attention.

The second and more vital method is observation which is not general, but specific. No doubt the specific attention of children to certain objects is partly involved in the activities above described. But *specific observation* as a definite method involves an attack upon well-defined problems, and the conduct of systematic experiments. The children now make a list of plants of certain types; for example, a list of the vegetables that are grown in the home and school gardens. They grow bulbs and geraniums, they experiment with the germination of seeds, they study the seasonal activities of the farmer, they record the types and the habits of weeds, they grow and observe wheat or some other cereal, they make a detailed study of certain birds, and when old enough proceed to compile note-books and to make illustrative drawings and diagrams.

The third method of approach is that of *class discussion*. For this to be effective, a supply of specimens sufficient to go round the class is essential. The work which ensues is reminiscent of an old-fashioned 'object lesson', except that the cultivation of sense-perception is not its end, and the lesson forms part of a continuous and well-selected series of studies, instead of being complete in itself. Some degree of unity should be given to the discussion by the statement of a central problem which the children are to solve, or by a definite action towards which the discussion is designed to lead, such as the setting of young plants, or the discovery of various methods by which seeds are dispersed.

The Selection of Materials

Since nature does not grade her processes from elementary to advanced, it is less important to seek materials that are comprehensible than to see that they are seasonal and local. For no matter how abstruse a natural phenomenon may be, children are instinctively interested in it. The inquiring habits of childhood are typified in the story of the small boy who asked where the wind goes when it does not blow. At first, no doubt, it is the big thing, the 'high light', that

attracts the mind of childhood; but with the development of mental power a myriad other details begin to acquire significance. For this reason the older pupils may study exactly the same subjects as the younger, but in a different way. In many schools, however, definite fields are allotted to certain grades or classes—flowers to one, vegetables to another, fruit to another, birds to another, insects to another, and so on. In this way it is ensured that the course as a whole shall be comprehensive; but any assumption that the topics allotted to infants are in themselves easier than those for the older pupils would be difficult to prove, since the life of one organism is little less difficult to understand than the life of another, if man alone be excepted. It is now generally admitted that the main principle to govern the selection of material for nature-study should be correspondence with the season of the year. This principle greatly simplifies the problem of obtaining specimens. Obviously, it would be ridiculous to study autumn leaves in spring, or stone fruits in winter.

With children under nine, nature study, as conducted in a classroom, is not without its peculiar difficulties. It has been pointed out by someone that young children are not unlikely to be more interested in blowing thistledown about the class than in studying the methods by which seeds are dispersed. They may be curious, but with a curiosity that does not go deep enough to be scientific. But the spirit of play which dominates almost all children may be utilized if they are permitted to draw or to paint the specimens with which they have been supplied, or if they are given such an occupation as to match the colours of flowers with pieces of paper or other material. Legends and poems may be introduced, the better to rivet their attention upon a related subject. For example, if the subject be a daffodil, the poems of Herrick and of Wordsworth to that flower may be quoted to good effect. But there is nothing like setting the children a suitable concrete action to perform. Leaves with strong veins may be soaked in a solution of caustic soda, placed on

blotting-paper, and beaten with a firm brush in such a way as to break down the tissue without injury to the veins. In this way a collection of skeleton leaves may be made; but the use of such a strong reagent as caustic soda must be carefully supervised by the teacher.

Excursions

It is customary to leave the choice of the exact topic to be studied to the teacher, who may be expected to make his choice in accordance with the opportunities which the locality affords. But to make the most of such opportunities, excursions become necessary. In the course of an excursion, many opportunities will be vouchsafed to the pupils to express their dormant inquisitiveness into nature's affairs. It will be strange if they do not make some discoveries for themselves.

Such topics as fruit trees, cereal crops, birds and insects call for observation such as cannot be conducted indoors. Neither can casual or fortuitous observation be relied upon to provide an adequate foundation for investigating such matters. Still less is it practicable or profitable to study 'plant communities' from a hard form set behind a barren desk. For the purposes of such work, both the plants, and the insects by which they are cross-pollinated, must be observed in their natural environment. It is clear, also, that as much may be observed on one excursion as can be described in a whole series of lessons. Another advantage of the excursion is that it exercises a unique charm upon children, for the child belongs out of doors. To the main purpose of the outing may be added various incidental objects. For example, pupils in the upper classes may have to study soils. In the course of each excursion that they may undertake, such pupils should take advantage of the opportunity to collect specimens of different types of soil, and to make a note concerning the plants that thrive therein, although each excursion may have been arranged with quite a different end in view.

The conduct of an excursion has its own difficulties and problems. It is often impossible and undesirable for the

whole of the class to keep together, but as any group shows an inclination to leave the main body, a monitor should be appointed to lead it. There is also the difficulty of ensuring that every pupil shall take the work seriously. A small proportion of the children may tend to regard the excursion simply as a pleasant ramble, but even so, their error is not sufficiently serious to condemn the value of the excursion as a whole. To very young children, the school garden should afford sufficient scope for outdoor observation.

Before any excursion is undertaken, its object should have been explained so fully as to be quite clear to the pupils themselves. There should be little difficulty in inducing them to propose the expedition, instead of doing so oneself. In the course of the excursion, specimens will be collected, suitable injunctions against damage to property, waste, or an unfeeling attitude towards sentient creatures having been issued beforehand. In the course of a subsequent discussion, the specimens may be produced, and in each pupil's notebook an account of the excursion, in some instances illustrated by drawings, should be entered.

In country districts, where the children are likely to have few competing interests, Saturday afternoon has been found a suitable time for holding excursions. In the city it is generally necessary that a half-day shall be taken from school-time. The older pupils may sometimes arrange excursions of their own. At other times they may be divided into groups or committees, each of which should investigate and report upon a special problem. Thus one group may study a watercourse and its path of erosion, at the same time that another is visiting a dairy-farm. Farms selected for visitation should be only such as employ the best methods, but since nature seldom uses others, almost any part of the countryside may serve for the investigation of purely natural phenomena.

School Gardening

Although a school garden is sometimes impracticable, there is no school in which flowers may not be grown, if it were

only in pots or window-boxes. In view of the admitted difficulty of maintaining a school garden under unfavourable conditions, and during vacations, hardy plants should generally be given the preference. As the writer once heard a kind friend remark to an amateur gardener: 'What you need are plants that will stand neglect!'

The objects of the school garden are to add beauty to the environment, to provide opportunities for experimental work, to train children for home gardening, and to afford suitable material for nature study. Apart from these objects may be mentioned the incidental advantage, that pupils who happen for any reason to have a free period may be profitably employed in gardening, under little or no supervision. The school garden may be regarded as a book of texts upon which the teacher may at any time found short sermons on the beauty of plant and flower. In the writer's experience this kind of sermonizing has greedy listeners, and is never likely to be overdone. Here, too, may be found butterflies and many insects, as well as worms and grubs.

Of one thing the teacher should be very careful—work in the school garden should never become drudgery; the pupils come to school to learn, not to dig. Work that is incidental to experimentation is generally done willingly, but every class contains a few members to whom gardening, unless as an avenue of escape from a more distasteful occupation within the classroom, appears as an unmitigated bore.

The school garden should be well laid out, the original plans having been drawn, in all probability, by the senior class as a co-operative project. If a part of the garden be allotted to each class, a competitive spirit begins to appear. In some schools the competition between classes is enhanced by the annual award of a cup or banner. In certain districts the senior boys have gone so far as to undertake the re-forestation of small areas, on which they may picnic at intervals in order to clear the undergrowth. Rockeries which involve little labour in the upkeep may become of considerable æsthetic and educational value.

A record of gardening ought to be compiled by a few of the senior pupils, and carefully preserved within the school. The record should show (a) the work that has been done; (b) the measure of success that has been attained during the season; (c) the means that have been adopted in order to cope with difficulties of various kinds, including visitations by pests and droughts; (d) the experiments that have been conducted, e.g., in manuring, growing crops of different types, pruning, budding, grafting, etc.; (e) the collection of seed; (f) the preparations for planting; and (g) other interesting features associated with the gardening operations that have been attempted.

Agriculture

Since all that a farmer does is to help nature to do her work in what is, from his point of view, the most effective manner, it follows that agriculture stands in a direct relation to nature study. The farmer must study nature, in order to be in a position to assist her operations. Hence, nature study should be a suitable preparation for an agricultural life. A knowledge of seeds, plants, animals, birds, insects and their ways pertains to farming, at least on its theoretical side. Manual dexterity is another matter; but pupils of an elementary school are not called upon to reproduce or to emulate the practical skill of an agriculturist. They have merely begun to understand and to be interested in such matters as the structure and growth of plants, the weather, soils and gardening. In the upper classes, farming should be much discussed, although, perhaps, as someone has remarked, very cautiously. By the method of experimentation, the pupils should learn the effects of manures and the modifications of yield attributable to varieties of seed. But the work of the older pupils ought not to become burdensome. The writer has been told by one ex-pupil, who was certainly not lazy, that his recollection of gardening was an image of pulling weeds in the heat of the day, so that he was glad to leave the task and the school.

In general, nature study provides a fitting introduction to the great and fundamental pursuit of farming; but it appeals to the majority of people even more deeply as a necessary element in general education, and as a means of widening the mental outlook, sympathies, tastes and interests of childhood.

Suggestions for Teachers

Among the published recommendations of the Board of Education, the following may here be emphasized. Although no book can take the place of direct observation, once interest has been aroused there is a place for books, from which eager pupils may add to their stock of information on congenial subjects. Among the books to which the older pupils should have access, there should be some which include accounts given by great scientists of their own work, others by means of which specimens may be identified, and others containing the biographies of such scientific workers as Galileo, Franklin, Faraday, Pasteur and Darwin.

The senior classes may reap considerable advantage from a room set apart for work in science. Such a room need not be devoted to nature study alone, but other types of practical work may alternate with this subject. A bench space of about two feet six inches to each pupil is requisite. There should also be cupboards, a water supply, sinks, and provision for heating. Stools will be found more convenient than chairs. If such a practical room cannot be set apart, hinged benches may be fitted round the walls of any large room. Simple balances will be needed, as well as thermometers, flasks, beakers, test-tubes, and glass-tubing. Much of the apparatus, however, may be made by the older pupils, or improvised from materials at hand. The following suggestion may be quoted in full:

In the practical room the class may be set to work in small groups, each with its problem to solve. This method of attack will be found especially helpful for the small rural school where the senior class may contain pupils differing widely in ability. Problems for the pupils' experiments may be conveniently set out on problem cards which indicate the method of attack, and may suggest the form in which the results should be recorded.

CHAPTER XXII

HYGIENE AND PHYSICAL TRAINING

The Teacher's Part in Promoting Health

ALTHOUGH the suggestion was made by Plato that in an ideal community the practice of medicine should concern itself with keeping people well, rather than with curing those who have become ill, it is only in very recent times that hygiene has become a matter of grave social concern. Even now, hygiene receives only a tithe of the attention that is paid to therapeutics. Yet it is both easier and better to preserve a person in good health than to restore him to it. Evidently, if health is to be maintained, society cannot begin too early to apply to it the results of scientific knowledge. Accordingly, 'baby clinics' and various other agencies have been instituted with the object of assisting mothers in the care of their offspring, while in connection with every well-organized school, medical, dental and nursing services are provided. The teacher's own part in the process is (a) to see that the conditions of the environment, especially as to cleanliness, rest and ventilation, are healthy; (b) to call the attention of the parents or of the medical officer to individual cases that in his opinion require attention; (c) to take all possible precautions against injury arising from accident; (d) to arouse a desire for good health on the part of the children; (e) to isolate suspected cases of contagious or infectious disease; and (f) to promote the formation of habits which are likely to contribute in no small degree to the boon of a healthy life.

One of the teacher's duties, very often neglected, is to care for his own health. If weak and debilitated, he cannot infuse proper energy into his work. If negligent in person or habits, he cannot inspire his pupils to cleanliness and order. If fatigued and 'nervy', he cannot maintain an equable and cheery manner in the presence of his class. For these reasons

it is due to his pupils, as well as to himself, that he should enjoy proper food, sufficient rest and change, and a good home or comfortable lodgings. Being constituted for so many hours a day the guardian of the pupils' health, he should keep himself as fit as possible for the task.

There are many who despise mere physical fitness, regarded as an ideal. In the celebrated story of the athlete and the æsthete, the athlete asserts his favourite doctrine of keeping fit. 'Fit for what?' retorts the æsthete. But the fitness of the teacher has a definite and worthy source of inspiration, none other than the desire to maintain entirely healthful conditions of life among his scholars.

The Pupil's Part in Hygiene

Prior to coming to school, the pupil's health has rested in his parents' care. Hitherto the child has done but little for himself. He has been washed, clothed, and tidied by others, with little or no co-operation on his own part. At school, however, he is in a transitional stage, by the end of which he should be able to look after his own habits of health and neatness. All this, no doubt, is largely the parents' concern; but by virtue of his expert knowledge and skill, the teacher may often be invested with greater prestige than is accorded by their offspring to the majority of parents. Once having been emancipated from the oversight of parent or teacher, the pupil revels in a new consciousness of self-respect and self-reliance. At last he can take care of himself.

Under the scheme advocated by Dr. Montessori, a child is taught to wash and dress himself, brush his hair, clean his teeth, take a daily bath, attend to his personal needs, and assist in the order and cleanliness of the children's house. While attention is being given to the dolls' corner, many hygienic lessons may be unobtrusively driven home; for hygiene applied to the dolls is generally better fun in the estimation of the children than hygiene applied to themselves.

Making Hygiene Interesting

Since instruction in health begins in the infants' school, and is generally a more prominent feature in the lower than in the higher classes, the problem of presenting such instruction in an interesting form becomes of special importance. The younger the child, the greater the ingenuity that the teacher is called upon to display. In some schools, instruction in hygiene is presented under the guise of a 'health game'. The game is introduced by a happy talk, in the course of which the children are informed that like other games it has certain rules that all are required to keep. If they abide by the rules, they will grow strong, and the girls (alas! for the sop to vanity) will have rosy cheeks. A time is formally set for the 'game' to begin. Each child is given a copy of the rules. The rules, if not very sporting, are simple and wholesome:

A shower-bath every day, a hot bath once a week.

Brush the teeth at least once every day.

Wash your hands and face before and after meals.

Sleep long hours with windows open.

Drink as much milk as possible, but no coffee or tea.

Eat some vegetables and fruit every day.

Drink plenty of water every day.

Play part of the day out of doors.

It is customary to ask the pupils each day which of them have kept the rules. This practice is open to objection, as not unlikely to make them cheerful little liars. Moreover, children cannot be expected to have a shower-bath every morning through the winter. It is true that no one will be scolded for not having kept the rules; but the desire to be on the right side is so deeply ingrained in human nature that many are likely to be tempted to assert fictitious claims. In some schools, graphs are founded upon the replies obtained from the children; but it would seem preferable that the pupils should be encouraged to play the 'health game' without any inquisitorial accompaniment. Charts or graphs to illustrate the growth of each child in weight are better than charts or graphs of shower-baths alleged to have been taken,

being founded upon more reliable data; but the children must understand that what is desired is normality, and not mere increase of weight for its own sake.

Vividness in Teaching Hygiene

Very young children may be attracted and pleased by the sight of nicely-printed and illustrated mottoes, such as 'Leafy vegetables give children rosy cheeks' and 'Apples and oranges are wholesome fruit'. But some of the mottoes occasionally displayed are decidedly illogical, such as, 'Rabbits eat lettuce and green vegetables, why don't I?' For on the same reasoning a child should relish the diet of a parrot or a horse. Even 'Tea and coffee are bad for us, we drink milk' sounds rather priggish. But in such matters the critical faculty of the younger children is less fastidious than that of the older. Hence, while posters and friezes bearing hygienic slogans may be appropriately displayed in the classrooms used by the younger children, in those occupied by the older they might be derided. As soon as it can be appreciated, a logical is preferable to a pictorial appeal.

Lessons to the upper classes may be made vivid and interesting by a skilful use of the devices of metaphor and allegory. The heart is described as a pump which sets blood flowing in an intricately-divided river. A tooth is drawn as a white castle which stands upon a red hill. The layers of material which constitute the structure of the tooth are represented, diagrammatically, as rooms of the castle, and their functions are shown to be more or less analogous to those of such rooms, the hard outer layer existing for defence, and so on. In the conduct of practical work, such as 'first-aid', little difficulty will be found in maintaining the interest of the pupils. The use of the medicine-chest, of splints, bandages, etc., is demonstrated, imitated and dramatized. While work of this kind is proceeding, the teacher should maintain a firm grasp of the situation, tolerating neither slackness from the indifferent nor buffoonery from the contra-suggestible children.

Rules of Health

Some teachers prefer to treat hygiene directly as a duty, rather than indirectly as a game. They draw up a series of simple rules such as these :

Don't sit on damp grass.
Don't breathe with your mouth open.
Take care to look where you are going.
Take care to stand straight on both feet.
Use your tooth-brush twice a day.

These rules are made palatable by various devices, such as the simple rhyme :

I use my tooth-brush twice a day
To drive the tooth-ache germs away,

but there may be a doubt whether any benefit that is merely utilitarian can justify philistinisms of this kind. It is better, perhaps, to compose an ingenious tale, into which the rules of hygiene may be cunningly insinuated. In order to illustrate the rule, 'Take care to look where you are going', there is nothing to prevent the teacher from telling an effective story of the boy or girl who, in flat disregard of this rule, fell and broke mother's milk-jug. Similarly, the picture-talk may easily be pressed into the service of hygiene. But in the upper classes of the school some part of the theory of hygiene should be studied. Among the topics which are suitable for study under this head may be mentioned breathing, ventilation, dangers of impure air, effect of draughts, water supply, principles of diet and cookery, mastication of food, temperance and moderation, infectious diseases, treatment of the apparently drowned, exercise, rest, recreation, games, sleep, dwelling-sites, lighting, dust, germs and microbes, drainage, smoking, prevention and treatment of accidents, and the essentials of physiology. Some part of the instruction to be given in hygiene must be differentiated according to sex. Special lessons may be given to the girls, while the boys are occupied in gardening or in some other form of manual work.

Inculcation of Healthy Habits

On the subject of habit-formation, no better comments can be made than those which are published in the Board of Education's *Suggestions for Teachers*, pp. 420-421:

Primarily, of course, health is a life to be lived and not a subject to be taught. Children are far more likely to acquire habits of healthy living through being trained to perform the acts upon which health depends than through merely receiving instruction which is mainly theoretical in character. Left to themselves, young children will not perform these acts by the light of nature. They require to be initiated into the life of health. They should accordingly be required to perform certain acts as a matter of regular routine; but, of course, no attempt should be made to explain to them the reasons for performing those acts. Older children, however, are entitled to have their intellectual curiosity satisfied and, consequently, in their case the practice of healthy habits should be reinforced by an appeal to intelligence and reason, though anything in the way of ambitious instruction in physiology should be avoided.

Mistakes to be Avoided

Under the head 'Mistakes to be Avoided', the handbook above quoted adds:

Nothing indeed is more dangerous to moral and mental sincerity or more fatal to the formation of healthy habits and the realization of the duty of health than the separation of theory from practice. Against two mistakes in particular it is necessary for the teacher to be on his guard. One mistake is to regard the treatment of health as a separate subject of the curriculum. The fact is that health instruction is naturally and intimately connected with physical training, housecraft, natural history, and, above all, biology. Only in a less degree has it intimate connexions with subjects like geography and history. There are few more interesting themes than the effect on the settlement and development of the Empire, of the great discoveries in tropical medicine or the influence of great epidemics on the social, the industrial and the political progress of the nation. The other mistake is to divorce instruction in health from the habits of the individual and the community. The study and practice of health must form, from the first, part of the everyday life of the school. It should be connected in the mind of the child not only with duties to his comrades, his school and his home, but also with the welfare and happiness of the nation at large.

Physical Training as Related to Military Efficiency

If the authority of Aristotle may be accepted, and in this connection there is every reason for believing it to be sound, the original purpose of the inclusion of gymnastic or physical education in the curriculum of the school was to promote efficiency in war. Subsequently, however, other aims were added. Even at the present time, no nation that may have to defend itself against external force can afford to dispense with physical training in the schools. But in recent times a strong and justifiable objection has arisen to the older custom of identifying physical training with military drill. This objection may be due as much to the conviction that military drill is uncongenial to the needs of child nature as to the suspicion that to prepare for war is to invite war to come. It must be admitted that the old-fashioned form of military drill generally found expression in a stiff, unnatural, strained and monotonous form of exercise, which reduced some children to a pitiable state of exhaustion. Its ideal seemed to be to make children as much like tin soldiers as possible. But is it too much to assume that a free, natural type of physical training may prepare pupils for the possible task of defending their country as well as a régime of the definitely military type?

Physical Training and Health

A justification of physical training which is even more generally acceptable to the minds of the mass of the people than that of individual and national defence is the promotion of health. In two senses, one is tempted to assert, life depends upon the liver. Physical training should be the natural expression of much of the instruction that is given in hygiene. For upon systematic exercises depend the proper development of the muscles and the adequate performance of the functions of respiration, circulation and renewal of bodily heat. Incidentally, exercises give tone and strength to the nervous system, and improve both the appetite and the digestion. Daily and regular physical training has an

advantage over spasmodic exertion, in that the development of the body stands in constant need of regularity and rhythm. Thus by steady, systematic exercise the muscles may be increased in size up to their natural limit, beyond which it is not advantageous to enlarge them.

Physical Training and Recreation

To many pupils, physical training will appear in the light of a recreation, although a few may cherish an inherent dislike for it which the wise teacher will attempt to overcome. That exercise in some form is recreative becomes clear from such facts as the vehement activity of pupils who have just been released from the restraints of the school-room. But physical exercise, although it may be recreation, is not relaxation. On the contrary, experiments have indicated that physical exercise may be more tiring than mental, and that it is not of the nature of a rest from the latter. Yet if not a rest, it is often a relief. After mental effort, physical effort, if accompanied by a sense of freedom, generally has an enjoyable quality.

Games as Physical Training

Games must be regarded as an important phase of both physical and mental exercise. As a rule, they are undertaken voluntarily and even enthusiastically. In a game, as in free play, the activity is pursued, on the whole, for its own sake, rather than for an end outside itself. But in games two new elements are added to those which are present in free play. These are, firstly, a code of rules, and secondly, the desire to win. A third element which is added to many games is co-operation or team-work, involving the necessity of self-subordination or even of self-sacrifice. Now each of these elements—that is to say, restrictive rules, an external end, and self-subordination—is involved in work as well as in games. Thus games lie midway between free play and work, preserving, as they do, the free spirit of the former and the

sense of responsibility associated with the latter. They bridge the gap between play, which has no external end, and work, which is never pursued except for an external end. In games, freedom and rules are compatible and complementary. A considerable degree of freedom is retained, but regard for rules makes it the more delightful. The very restrictions by which the game is safeguarded become means of self-expression and incentives to combination.

Viewed in this light, games are now considered to have great value for physical training, and more and more of the exercises which are deemed to be necessary for the body are being practised in the form of organized play. For example, 'tunnel ball' is a game for which members of the class are divided into two sides equal in numbers. The sides take up their positions in two parallel lines, the members of each side being ranged behind their leader at intervals of about a yard. At a given signal, the leader of each side passes a football rapidly between his legs to the nearest follower, and so the ball is passed on to the rear of the line. On receiving the ball, the rearmost competitor rushes to the front of his line and becomes leader. The race continues until each competitor has had a turn as leader or until 'time' is called. In many ways 'tunnel ball' has been found superior to the old-time series of mechanical and unconvincing exercises in bending and stretching.

It will be seen that the value traditionally attached to games is not imaginary. Perhaps Bertrand Russell may not have been altogether serious when he suggested that if the Battle of Waterloo was won on the playing-fields of Eton, the British Empire is being lost there. For although it is true that games cannot furnish all that is necessary in education, yet their place among the major occupations of the school remains just as indispensable as ever. And if the writer were to be asked what part of his earlier education he now considers to have been the most indispensable, he would be very much tempted to reply, games.

Subordination of the Body to the Mind

Not only may physical training promote such ends as national defence, and the health and enjoyment of the individual, but it may also become a means of enlarging the empire of the will. The will of a man who can swim is more efficient than the will of a non-swimmer to save a drowning child. Similarly, the decision of a good tennis-player to 'place' his shots in a certain way is more efficient than that of a beginner. And, to select a less specific illustration, the determination of a muscular person is more efficient than that of a weakling to defend the oppressed against brow-beating, bullying and baiting. It is only in highly romantic and unrealistic tales that the untrained hero enters the prize-ring and gains a decision over a professional pugilist. So important is it that the body should be trained to be a fit instrument upon which the mind may play melodiously, that a certain school of gymnastics regards this as the main object of physical training. This school, which is typified by the German *turnverein* movement in its older form, maintains that the body should be practised in doing everything that it is not inherently incapable of doing. For example, any person who has the capacity to wiggle his ears should assiduously exercise it, lest a motion that once must have had a reasonable ground of existence, and may yet have it again, should, perchance, be lost for ever to the human race. At least there is a strong argument for maintaining the more normal activities of the body on an effective footing. As is well known, lack of exercise tends to be followed by sluggishness of the parts not used, and even by a gradual atrophy of the neglected members. And who can foretell what may be the possible utility in the future of any specific capacity for physical action? Hence the teacher does well to assist each and every pupil to make of his physical organism a prompt and efficient agent of the reason and the will. The body should be as complete an expression as possible of the mind.

Grace and Symmetry

An aim of physical training that was quite prominent in ancient Hellas, although it has long been relegated to the background by puritanic influence, is beginning to receive due attention once more. This is symmetry, grace, beauty of person, which is generally, though not invariably, associated with mental qualities of poise, harmony and rhythm. In the modern revival of folk-dancing, and in the Dalcroze and eurhythmic systems, the ideal of grace, for a long time considered proper only to courtiers and fashionable beaux, is being exalted and popularized. Thus music and physical expression are induced to march hand in hand, for as Plato writes in the *Protagoras*, 'The life of man in all its parts stands in need of harmony and rhythm.' Not only is exercise needed but exercise of every muscle, if balance and harmony are to be attained. Thus a game like hopscotch has little value in physical training unless the rules are so modified as to require alternate hopping on either leg. One of the best examples of a game which exercises every muscle is lawn tennis; but in this game one arm and shoulder are used more than the other. Thus games ought to be supplemented by corrective exercises, planned in such a way as to meet the needs of the individual pupil. As a means of physical development, swimming is remarkably complete and well balanced, but the facilities for this sport are usually somewhat restricted.

Methods of Teaching Physical Culture

The best physical results are derived from a regular mode of procedure. Hence in ordinary lessons a uniform sequence should be pursued. The following is an example of a well-considered sequence. At first a few introductory exercises may be employed which, unlike the main body of the lesson, have something in common with military drill. The children should fall in, turn, stand at attention, and stand at ease. Next may follow a series of exercises for the muscles of the head, arm and shoulder-blade, such as pressing the head

backward with the chest lifted, backward skipping, flinging the arms, etc. These movements have the special merit of counteracting the mischief which tends to result from continuous stooping over desks. Exercises of the trunk may follow, only forward and downward movements being practised at this stage. An example of this group of exercises would be: 'With hands behind the back, feet astride, jump!' From the position thus reached the children should grasp the ankles quickly, without bending the knees. Lest the exercises become irksome or tiring, a short break should now be allowed, during which the children are permitted to move about at will. On resuming, exercises in deep breathing are performed. During such exercises the children should be permitted to take their own time for breathing in and out through the nose. Lest they be tempted to take the time from their fellows, they may be instructed to close their eyes. Balancing exercises follow. Then comes the second section of trunk-exercises, in the course of which the trunk is bent or turned sideways. Another break precedes more exercises in deep breathing, after which ranks are re-formed for marching into school.

Commands

So great is the power of suggestion that the degree of success likely to be achieved by the teacher depends not a little upon the manner in which he issues his commands. All orders should be consonant with the nature of the exercise. As a rule, an order should be preceded by a concise description of the exercise to be performed. The command itself should be firm, without a trace of uncertainty or ambiguity, and loud enough to be heard easily by all. It may be uttered slowly or smartly, in accordance with the nature of the response that it is intended to evoke. 'Knees bend' should be almost drawled; 'Eyes right' may be as smart as you please. It should be mentioned that in demonstrating an exercise to a child, or in correcting his actions, the teacher's hand should not be laid upon him; rather let the teacher demonstrate the exercise in his own person.

Folk-dancing

In every country there linger typical dances of the people that have been practised from time immemorial, harking back in some cases, it has been suggested, to the nature-ceremonies once performed by a primitive ancestry. In England such folk-dances have been tripped from generation to generation by villagers who knew and cared nothing for the measures that might be current and fashionable among the gentry. Destitute of ceremony or formality, the country-dance is performed in couples, no special form of dress being obligatory. So easily may the steps and figures be learned that any person of average intelligence and physique can qualify without difficulty as a competent performer. From the English country-dance the *quadrille* is a recognized survival. While the original objects of folk-dancing seem to have been no more than pleasure and social intercourse, among the reasons for the revival of the practice in recent times must be mentioned the quickening of the national spirit and the provision of a graceful form of exercise. But in any case, the English folk-dances would be worthy of a place in the school for their simple, rhythmic beauty of movement and riotous melody.

It is not, therefore, surprising that the Morris-dance and the country-dance should have taken definite rank in the curriculum of the elementary school. For artistic and educational reasons, these dances should be translated into their new environment in their most faithful, orthodox and traditional forms. Practice will be needed before they can be performed gracefully and without any sign of distress. The spirit of folk-dancing is very important; there is something wrong if the dance becomes on the one hand lifeless, or on the other disorderly. On the more mechanical side, spaces must be kept even, and the dancers should think one figure ahead of the music. Properly conducted, folk-dancing in the school may do much to promote an easy and natural grace, an upright and dignified carriage, a quickening of the artistic sense, and a quaint and charming development of personality.

Suggestions for Teachers

Among the Board of Education's published suggestions, the following may be briefly cited as supplementary to what has been said above. Physical training should be so interpreted as to include not only physical exercises, but also games and athletic sports. No one form of game or exercise is likely by itself to ensure a healthy constitution. The effects of physical exercises can be predicted with some degree of exactness, but those of games tend usually towards a somewhat uneven development of the body. The importance of good posture is very great—the more so, the writer would add, since the art of deportment is no longer as prominent as formerly in the education of upper-class and middle-class children. Essentially, good posture is the position in which mind and body are capable of their maximum activity. 'Bad posture breeds fatigue, and fatigue bad posture, and so a vicious circle is created.' While children are at school, short exercises in breathing and in brisk movement should be practised several times a day. Care should be taken that suitable apparatus for games is available; some of it can be made at school. Although a fair standard of skill in games should be aimed at, inter-school matches should be held in lower regard than the games of the pupils as a whole. Apart from their physical advantages, games are the *fons et origo* of sportsmanship. As to folk-dancing, Morris and sword-dances are intended for team-display by members of the same sex, and are better suited to boys than to girls. These dances should not be undertaken by children below the age of eleven or twelve. Country-dances, on the other hand, are intended for both sexes, preferably dancing together. Swedish drill should be taught only by teachers whose powers of observation have been trained in that connection; and the same may be said of other exercises for the performance of which apparatus of some sort is required. The opinion is ventured that 'In girls' schools dancing, appropriately taught, is an extremely valuable form of physical exercise'.

CHAPTER XXIII

ART

IN the primary curriculum, the fine arts are represented chiefly by drawing and music, and the applied arts by various forms of manual training. So close, however, is the interconnection of these groups of subjects that the terms 'fine' and 'applied' are no more than relative, and the ideals which they represent are by no means mutually exclusive. In fine art the ideal of workmanship must always be present, and in manual work the ideal of beauty. For purposes of the present chapter, the term art connotes drawing, painting and modelling, while the term drawing generally has reference to work done in colour as well as in form.

The Value of Art in the School

For several reasons, drawing, modelling and painting have found a recognized place in the elementary course of study. For, in the first place, pictorial art represents one of the mighty achievements of the human race, an acquaintance with the essentials of which must be handed on to successive generations. Secondly, art fulfils a general and deep desire which is rooted in an instinctive want of human nature, the desire to create something beautiful. Thirdly, instruction in art is necessary to the full mental development of the pupil, especially in so far as that development should include an appreciation of painting on its higher and finer levels, and generally a cultivation of the æsthetic sense. Fourthly, drawing and painting form no mean part of the preparation of many children for a life of practical utility. It will be generally admitted that these values transcend without destroying those which were formerly considered adequate to justify the subject, namely, 'hand and eye' training, skill in technique, and the power to reproduce accurately the form and colour of objects.

Art and Mental Development

Early in the infancy of civilization, as in that of the individual child, an impulse towards drawing appears. In crude imitation of nature, primitive drawings frequently preserved and communicated ideas which were founded upon natural phenomena. At a later period, more conventional designs appeared upon canoes, household articles, weapons, or even, through tattooing, upon the human body. If drawing thus corresponds with an urge, so generally manifested in primitive communities, it is not surprising that it should correspond with a very general instinctive tendency which exists in the mind of civilized childhood. The merest infant delights to seize a pencil and make marks upon paper that have significance to himself, if not to others. Drawing is a natural means of expression; and since a child's circle of ideas must needs be limited, it follows that by his drawings the teacher may know him. Regarding the art of drawing as a form of play, every child is conscious of his ability to draw in some degree. Guided by the teacher, his mind, hand and eye gradually become ready to effect a smooth and ready co-partnership. But it is never possible for drawing to become as mechanical as, for instance, the four fundamental operations in arithmetic; for in drawing the mind remains always active, selective and judicial. Constantly, therefore, the powers of reasoning must be exercised in order to determine whether and why such-and-such lines should converge, how mass compares with mass, and space with space. The teacher is training citizens rather than artists; and in drawing he finds a means of developing many of the powers of observation, imagination, judgment, memory and reason whose cultivation is essential both to the good of the individual and to that of the community.

Art and Appreciation

In addition to its general value as a means of mental development, art holds a unique place in the course of study as a form of expression of the pupils' love of beauty, and

as a means of cultivating his sense of what is beautiful. Art gives to the artist, however humble and inferior his efforts may be, what is, perhaps, the highest and greatest pleasure of which man is capable—the pleasure of creating. That this statement applies to other arts, as well as to drawing, does not detract from its truth in relation to drawing and painting. To the full extent of his capacity, the pupil should, under guidance and assistance, attempt the creation of beautiful things. In so doing, he will begin to learn how to appreciate what is artistically beautiful. Artistry presupposes appreciation of beauty, without which the worker can have in his mind no standards of performance. For the younger school-children, it may be enough that they should appreciate ‘prettiness’; but the elder are capable of being trained to appreciate the more dignified aspects of beauty as they occur both in art and in nature.

Art and Utility

Without agreeing with those who maintain that the æsthetic sense is merely a product of the sense of utility, one may readily concede that the most beautiful form of an object tends to be the most useful. A well-turned piece of pottery, a well-made weapon or canoe, is generally more useful, as well as more ornamental, than one which lacks either artistic conception or artistic finish. If the evidence were limited to such facts as these, the sense of beauty might well be regarded as secondary to that of utility. But there are other facts to be considered. For example, a child will recognize beauty in an object of the utility of which he has no conception whatever. Even if it were conceded that our very instincts have been so influenced in the course of ages as to identify beauty with possible utility, this might explain the child’s appreciation of an unknown beautiful object; but it would not explain the joy which a beautiful sunset may convey to the seeing eye. It seems improbable that human appreciation of the beauty of a sunset, or of a flower, has any fundamental relation to utility, even though a fine sunset

may often herald a fine day, or a flower suggest the possible presence of water. On the whole, then, the æsthetic sense may be regarded as original, and independent in great measure of practical considerations. Nevertheless, the sense of beauty is generally applied whenever useful objects are to be made, and almost every industrial product, except a gasometer, is expected to conform to it.

In considerable measure, the processes of every branch of industry depend upon drawing. To building, engineering, joinery and many other trades, drawing is essential. The distinction between artistic and mechanical drawing, though it may exist, is more apparent than real. Both are creative, and both may be beautiful; so that it would be difficult to urge that Michelangelo was a much greater artist than the designer of the Parthenon. While he remains at school, the pupil will draw both practical and beautiful things, and it will probably be unnecessary for him to distinguish sharply between utility and beauty as ends which he should endeavour to attain.

Object Drawing

In some schools the practice of drawing from objects is conducted in an uninspiring manner. An ugly, worn-out vase may be presented to the class, together with the instruction to the pupils to draw whatever they can see. They, dull and uninterested, derive no pleasure from their task. Art for them soon becomes associated with dirty chalk-boxes and drab articles of furniture. The natural creative powers of the children are repressed, and no appreciation of beauty as connected with art is conveyed. For most of them it would have been better to have copied a picture that had made a lively impression on their minds than to have occupied themselves in such a banal way with the drawing of 'objects'.

Yet, object-drawing is a necessary exercise in the process of drawing from nature, which is much more essential than making copies can ever be. If skilfully managed, the drawing of objects can be made sufficiently varied and interesting to overcome the limitations that have been indicated above. In

the lower grades, object-drawing should begin with the vague shapes of toys and other interesting articles, done in pencil on white paper. The object should be shown as completely as possible, age and the medium employed being taken into account. When colour is used, attention should be paid to light, shade and reflection. Pupils in the upper classes may attempt to represent the attitudes and movements of a child who poses as a model, the relative positions of head, trunk, arms and legs being noticed with particular care. Most children are fond of drawing plants and flowers, the beauty of which appeals to their æsthetic intuition.

In few directions is careful grading more essential than in drawing from objects. While the youngest children may freely express their ideas and impressions concerning people and things through the medium of mass and line drawing, their feeble efforts will soon become unsatisfactory even to themselves, and the teacher should guide them gently towards more adequate norms of performance. At first, as in the old Noah's Arks, the doves are as big as the elephants, and the first important advance in drawing consists in the cultivation of a sense of proportion. Once proportion is understood and achieved, objects may be drawn which involve the free perspective of level rings and circles. The free perspective of straight edges is the next obstacle to be surmounted, after which objects whose outlines combine level circles and straight edges may be attempted. By the term 'free perspective' is understood the drawing of objects as they would appear if a glass were held across the direction of vision.

The following technical instructions are quoted from a carefully-compiled syllabus:

Use *free outline* when studying the free perspective in object drawing. Use *mass drawing* in showing all that can be appreciated in colour, shade, shine and shadows. Have direct expression without construction lines. In the first few minutes the whole object or group should be expressed as truthfully as possible with free trial lines or masses, and during the rest of the time each part should be criticized and improved. Improvements should be made before the trial lines are wiped off. In pencil work, make the relative tones correct before shading.

Drawing from Imagination and from Memory

At all stages it is important that the pupils should enjoy opportunities for imaginative drawing in which perfect freedom is allowed. In this kind of work the children may be as ambitious as they please, including in their treatment of a theme not only definite objects, but also any background that they may desire to put in. Any sketches that the teacher may make should be done after the pupils have completed their own efforts. No two imaginative drawings should be alike. The subjects may be taken from other lessons.

Drawing from memory may be either the reproduction of a drawing previously made from an object or the representation of an object such as a ship or a house, the outlines of which have been carefully memorized in anticipation of the exercise. Sometimes interest may be promoted by the device of showing an object for a few seconds in order that the pupils may make a 'snap-shot' drawing after the object has been removed.

Painting

At the beginning of a lesson in handwriting, in drawing or in painting, it is advisable to have the class practise in the air, with a free movement, the use of pen, pencil or brush. This exercise should occupy but a few minutes, its object being to co-ordinate muscular operations with the particular aims of the will. Children of eight are old enough to begin to use the paint-brush. They revel in the beauty of colour, and are soon able to appreciate the orderly arrangement of colour schemes and of design. Natural objects should be painted without the use of a pencilled outline. In the upper classes, the pupils should invent their own designs, using natural objects as a foundation. While it may be enough for the younger children to paint flat specimens, the older should begin to represent more difficult objects, distinguishing between various shades of colour, and between the high lights and the shadows.

Design

Once pupils are old enough to make designs of their own, they may readily be interested in the prospect of designing a tile, a book-cover, or any other suitable article which they may work upon at leisure and ultimately, perhaps, present to their parents. They must begin by making a careful and faithful painting, under the teacher's direction, of some natural object. Strict adherence to shape, colour and features of growth should be demanded. The colours used must be harmonious, and no element of the ridiculous can be tolerated. The whole work should conform to a reasonable standard of artistic taste, and should express the pupil's own sense of beauty. While the original painting must be done at school, on account of the need of supervision, its reproduction in design is an occupation for which time can only be found in the home.

It is usual to make a design for a tile in one corner, and to repeat it in the other three; but, alternatively, the design may be made for one half, or may be grouped about the central line. For book-covers, designs ought not to be ornate. Since a design repeated in four corners would leave but little room for the title, the design is preferably made for one half, and repeated on the other half of the cover. Sometimes the major part of the design is placed above the title, in such a way that a tail hangs down the left-hand side. Simple generalizations such as these should be established by the pupils themselves.

Modelling

As nothing delights the young more than modelling, this art is attempted by the youngest children. In some lessons, they are allowed to model what they please in perfect freedom, although in others they may be skilfully induced to limit their subject to a button, leaf, fruit, berry, flower, toy, egg, chain or basket. The first tools used in modelling are the fingers, and for some years they should be the only ones. When tools are introduced, it is merely in order to supply

details for which the fingers may be found inept. Sometimes objects may be modelled in illustration of other lessons. Like drawing, modelling may be done either from the object or from memory or from imagination; but it should not consist merely in copying some other model. Nothing gives pupils in the higher classes more encouragement than to have their best work cast in plaster, or preserved in some other suitable way. As the pupil advances, he may have to make a choice between modelling and brushwork, either of which can be applied in design. Painted designs have already been considered; modelled designs may be conveniently applied to repoussé leather, to metal-work, or to carving in wood or stone.

Suggestions for Teachers

According to the Board of Education's published *Suggestions*, the three main purposes which have been ascribed to drawing as a school subject are expression, representation, and culture. From the point of view of expression, drawing may be regarded as a kind of language. In this connection the writer would submit the following suggestion. Originally drawing was essentially a form of language, so much so that North American Indians, ignorant of the art of writing, would leave messages for one another in the form of simple drawings which they would trace on rocks. Why should not drawing be developed in this way at school? Instead of writing a letter, each pupil might draw something that he has seen, or experienced, for the benefit of another pupil, who would be expected to interpret the drawing. This device could be reduced to a system; and it cannot be doubted that the pupils would soon begin to improve upon their efforts to represent ideas successfully in pictorial form.

To return to the Board of Education's *Suggestions*, by which the remainder of the present chapter is inspired, while drawing as expression is a form of language, (drawing as representation is the literal reproduction of what is seen.) This aim, although regarded as sufficient by John Locke, is narrow, in so far as it appears to exclude such elements

as creative imagination, inventiveness and individuality of experience from a place among the considerations which determine what to draw. Mere representation requires nothing more than a certain degree of technical skill, in itself hardly an adequate ideal for the scholar. ~

A much more educative and less humdrum object than representation is culture. From the cultural point of view, which has many ardent advocates, drawing should subserve æsthetic and spiritual ends, representing as it does in a peculiar sense the aspirations and achievements of human society in the realm of the picturesque and the beautiful.

Symbolism

The early drawings of a child, like those of the race, are symbolic; and while his own symbols continue to satisfy himself, the pupil derives great pleasure from mere spontaneous scribbling. At this stage, nothing could be more ambitious than the scope of his art. He is prepared to draw a school, a city, or even a battle. Unfortunately, his achievements, however satisfactory to himself, meet and merit little approbation from others to whom they are shown. As soon as the child becomes sensitive to criticism, or grows dissatisfied with his own efforts to realize his lofty aspirations, his interest begins to flag. This is the point at which it behoves the teacher to show himself more sympathetic, encouraging and helpful than ever before.

Form and Colour

To a great extent the technique of drawing is affected by the character of the medium employed. While intractable materials like pencil and paper lend themselves naturally to outline, the paint-brush is more appropriate to the production of 'mass' effects. As a matter of common experience, the earliest attempts of a child to draw are usually related to outline, rather than to mass, but this is believed to be due to the availability of certain materials, especially the pencil, and not to any innate preference for form as against colour.

On the contrary, it seems to be from colour, not from form, that the child derives the greater delight; and it is through work in colour that his sense of the beautiful can be most readily awakened. Since form and colour can scarcely be separated, the contrast might seem to be purely academic, were it not that a choice has to be made between pencil and pastel, between outline and mass. The child must begin somewhere, and for little children the natural point at which to begin seems to be colour. Instruction will be necessary in colour-mixing, and the pupils should use their endeavours to match a series of hues found in nasturtium flowers, in oranges and lemons, or in other convenient objects, by patches of pastel or water-colour. Also from time to time the attention of the pupils should be drawn to a fine picture, a beautiful sunset, or a charmingly decorated room. They should not cherish the vain-glorious belief that the only approach to the enchanted palace of beauty is the laborious and scarcely recognizable route that they can carve with their own hands, aided only by the puny tools which they themselves can wield.

Black and White Media

Used on white paper, the pencil is capable of producing form apart from colour. But often the pencil employed is much too hard. Great difficulty is experienced by young children in holding it properly; and perhaps the art of pencil-drawing ought not to be seriously attempted until the pupils have had some practice in the easier and freer occupation of drawing with chalk on the blackboard. By advanced pupils, the pencil should be used for sketching objects of interest which they perceive out of doors, preferably in sketch-books which they may make for themselves by folding drawing-paper and inserting it into a cardboard cover. Pure line drawing, in spite of the difficulties which it entails, appeals to many of the older pupils, who may have become familiar with work of this type as it appears in books and magazines.

Arrangement of the Course in Art

The success of the course in drawing is apt to depend upon the character of the teacher's own skill and interests. In most schools there seems to be a tendency towards confining expressive drawing to young children, object-drawing to the older pupils. But in this as in other subjects, expression and impression should go hand in hand. The visual memory should be trained systematically, so that pupils may improve in the power of 'seeing' things mentally.

Until he comes to the age of about eleven, the child draws mainly for self-expression. If, however, he is to improve rapidly upon his early and crude efforts, especially in regard to the representation of the human form, he needs skilled help. Exercises in making silhouettes, or in cutting out paper so as to construct simple patterns, are likely to contribute towards fixing the children's ideas on 'mass'. Objects selected for drawing from observation or from memory should be both interesting and varied. Conventionality either in the object or in the arrangement should be avoided; for example, a fruit should not always be drawn in the same position. Comparison and contrast should be freely used; to this end, an apple and a pear may well be drawn together. Neither are composition and arrangement too difficult nor too abstract for the older pupils to appreciate. The device is recommended of drawing a 'frame' on paper, and asking the pupils to put their drawing together within the frame in such a way as to convey a pleasing effect. As to accuracy of execution, with reference to the efforts of children it should be regarded as a relative term. Some degree of neatness can generally be attained; but 'finish' need only be interpreted as correspondence with the idea that exists in the mind of the child.

After reaching the age of eleven, pupils stand in need of skilful teaching; but the elder may do much of their work individually. The few who happen to reveal a promising artistic bent should be encouraged to make of drawing a delightful hobby and to interest themselves in divers forms

of representation. The others, in the meantime, may be set to hand-sketch objects in a less ambitious way. The great difficulty of foreshortening, which has not always been successfully solved, even by the leading artists of some periods, has to be faced—how objects of three dimensions shall be represented on a surface of two dimensions only. In this matter the greatest difficulty is apt to be experienced by those who have been accustomed to draw outlines, but not surfaces. As a method of approach, a door may be drawn at first when shut, and afterwards when open. Next, the faces of a rectangular box may be painted in different hues, in order that the pupils may be able to determine the more readily what it is that they actually see of each surface. By means of rings and hoops, the foreshortening of the circle may be demonstrated with comparative ease.

All pupils should acquire a good form of lettering. They will enjoy the opportunity to design posters, introducing artistic initials and borders. Another adaptation of drawing is 'script' writing, a form resembling that which was employed in medieval manuscripts. Wood-cuts are somewhat ambitious; but lino-cuts can easily be made, printing from which is a fascinating occupation for the more advanced pupils. Nothing should be drawn that is mean or ugly, for surely ample scope is afforded to the young artists by the infinitely varied beauties of nature, which should be interpreted to their eyes in all their dignity and splendour.

CHAPTER XXIV

MUSIC

The Place of Music in the Course of Study

THAT music holds a place of special honour in the elementary course of study was recognized by the ancient Greeks. As Aristotle pointed out, music is pre-eminently a 'liberal' subject, one that a person free to exercise his choice would think it worth while to pursue for its own sake. While other subjects have more or less a practical bearing, music is pursued not for its utility, but for its intrinsic merits. Certainly it has a close relevance to the nature and life of mankind. Scarcely any tribe, however primitive, lacks its form of music. Of the two main phases of the subject, melody and rhythm, rhythm is the first to be appreciated by the savage or by the infant; but melody lags not far behind. Hidden deep in human nature are chords which vibrate so wondrously to these stimuli that the whole mental attitude of an individual or of a group may be modified thereby. Music may move to tears, or bring comfort and solace, or stir to heroic deeds. Thus, on listening attentively to music, the mind itself undergoes an emotional change.

Although music is not included in the primary curriculum for its utility, it is rightly included because it represents one of the most wholesome and beautiful influences that can possibly occupy an hour of leisure. How much of a person's 'spare time' should be devoted to music no one can say, for evidently the proportion must and should vary widely; but few indeed should be deaf to the claims of music altogether. Not without reason had Shakespeare but a poor opinion of 'The man that hath no music in his soul'. But although music is still ardently pursued, in recent times a change has come over the character of the devotion which, fortunately, is still paid to it. Formerly performance was the main aim; a normal person was expected to be able to sing for the

delectation of himself and others. The standard entertainment was the 'musical evening'. Now the gramophone and wireless telegraph have changed all that. Never have there been so many listeners, never so few performers. This statement, of course, applies not to the process of schooling but to the use of leisure. On the other hand, the average quality of performance has been raised, the more so since only skilful renderings are mechanized, and indications of a musical revival have begun to appear. The time is already passing when, to adapt a phrase of Baudelaire, every suburban gramophone clangs forth a barbaric *jazz*.

One advantage of music which may be deemed secondary, but is, none the less, of great importance, is the physical development which it does so much to enhance, especially in relation to voice production. It is now maintained that the first minute of every lesson in music should be devoted to breathing-exercises. Even in the infants' school, the children perform similar exercises in a play way, under the pretence of blowing up balloons, smelling flowers, or imitating the wind. More formal exercises in breathing follow at a later stage. Smoothness of breathing is necessary to smoothness of voice; and in teaching each song the teacher should indicate the proper points for taking breath. By this means gasping is avoided, and the words are more clearly enunciated.

The intellectual powers, as well as the physical, are developed by music, although the extent to which the intellect profits from the formal training given in music is unknown. Certainly music calls for thought in no small degree. Each song should be explained to the pupils, who should henceforth be expected to sing as if they appreciated its meaning. Concentrated attention is required, as well as keenness of perception and continuity and regularity of thought. Great importance should be attached to sight-reading, with which these qualities are intimately involved.

Music is also a kind of language, one that can do without words and can sometimes express shades of significance

beyond the power of words to convey. Only by a special kind of training can the full message of music be understood. There is more to be appreciated in music than in pictures, and if the utmost benefit is to be derived from either, a systematic discipline of the imagination must be undergone. Exercises in the appreciation of classical music which may be played to the class on the gramophone are early steps which may be taken in the right direction. A genuine appreciation of good music is possibly the highest quality that the teacher of this subject in the schools can aspire to create.

The Aims of Music in the School

The main educational aim of music can hardly be stated in terms of appreciation; for again the question arises, what is the aim of teaching children to appreciate music? Ultimately there can be no better analysis of the educational aims of music than that for which we are indebted to Aristotle; music may be taught for the education of character, or for enjoyment, or for the right use of leisure. In a measure, music in the primary school should subserve all these ends.

Music and Character

Firstly, music influences character, because it influences the types of action wherein character is developed. For example, 'jazz' music, if heard daily and not balanced by music of another kind, may bite deeply into the soul. Martial music, on the other hand, stirs up manly emotions, but if unrelieved by softer moods may tend to make the young unduly bellicose. On the other hand, the street musician regards pathetic ballads as his stoutest ally, for minds that have been stirred to pity are more likely to determine upon a benevolent course of action than those which have not been subjected to the influence of wailing harmonies. But for all that, the influence of music upon character continues to be somewhat precarious and indirect. Music is capable of producing certain emotions, and of suggesting certain modes

of action, but it often happens that conflicting forces are so powerful as to negate the expected response. Moreover, the influence of music upon the mind wears off quickly. A person who has been moved to tears by a performance of *La Bohème* may button up his pockets when approached for help by some miserable waif of the street. Hence the modern teacher of music is less disposed than the ancient Greek to regard character as the chief end of his art.

Music and Enjoyment

Still less is mere pleasure the end. No doubt a place in life remains for the sheer enjoyment of music, and certainly music in the school should be enjoyable. This fact is widely recognized; in the lowest classes, in fact, music forms a part of the children's play. In the infants' school more than one-half of the occupations are performed to music. But enjoyment must be distinguished from mere pleasure as such. Into enjoyment other qualities besides pleasantness may enter—intellectual and moral qualities by which pure feeling is modified and, as it were, graded. Even in social gatherings music may be valued less for its pleasure-giving qualities than for the warmth and softness which it brings to the human heart. Moreover, there are different levels on which music may be enjoyed. Music is capable of giving enjoyment of a higher quality to an upper than to a lower class of schoolchildren; and the teacher who proposes to regard the pupil's enjoyment as his aim should take heed that this enjoyment shall be of the highest possible quality. The quantitative enjoyment of inferior music is no indication of good taste.

Music and Leisure

It would seem that on the whole music is taught at school chiefly because of its value for leisure. That music should have always been regarded as one of the best modes of recreation is a high tribute to the merits of the art, for it is in this leisure that man is free to pursue whatever he regards as best worth while. Whether during his leisure he prefers

to be a performer or a listener is not now to the point; for music, like cookery, is an art that one need not practise in order to enjoy. The Athenians held that no man is educated who cannot play the lyre, but admitted that a man might think it undignified to continue to play after his education was complete. In the modern elementary school, music consists essentially in singing, though the attention given to instrumental music shows a tendency to increase. Probably instrumental music should never become a compulsory subject of instruction; yet the only difficulties in the way of making it fairly general are time and the expense involved in the employment of specialist teachers. If the modern curriculum were as simple as the ancient, time would present no difficulty; but at present the child has to cope with a course of study already burdened by a multiplicity of subjects, which, however good in themselves, leave little room for the addition of more.

The teacher of music, then, will endeavour to affect for good the character of his pupils. He will strive to promote their enjoyment on the highest level possible. Finally, at all times, he will seek to prepare and encourage them to the right use of leisure.

Breathing

It has already been indicated that the youngest children should practise breathing, not as a formal exercise, but in imitation of the wind, or in connection with such 'play' activities as whistling and puffing. As soon as formal exercises begin, the class may exhale on the sound *ss* or *sh*. Another useful exercise is to count quietly, without variation of pitch. At all costs strain is to be avoided. By no means should the shoulders be raised, or the abdomen protruded to a marked extent, while the lungs are being filled with air. Whereas in physical training all the breathing exercises are performed through the nose, in voice-production some of the exercises require that the children, although they inhale through the nose, should exhale through the mouth. During exercises in voice-production, the body should be

held at attention, but not stiffly. The drill in inhaling and exhaling might easily become tiresome and monotonous, but variation may be introduced by taking the exercises sometimes slowly, sometimes more quickly. At other times the breath may be held prior to being exhaled, or during the process of exhalation the pupils may be instructed to count, or to recite a short passage with due attention to expression.

Voice-Exercises

The first aim of the teacher is to induce the class to sing in a pure tone, softly, sweetly, and without strain. To this end, the children must use the 'head-voice', the voice that is most characteristic of childhood. Young children should not be permitted to use the chest register, and for this reason the songs which they sing should be set fairly high. The head-voice may be 'drawn down' to lower notes if exercises are given in which the children start on a high note and sing a descending scale to the sound *o* as in *odd*. Other vowel-sounds which may be gradually introduced into exercises for the voice are *oa*, *ee*, *oh*, *ay*, *aw* and *ah*. Many exercises may be sung to such a combination of vowel-sounds as *oo-oh-ah*. A certain amount of breath should always be held in reserve. Once the head-voice has become habitual, attention may be given, as recommended in an official syllabus, to forward tone, good quality, the blend and equality of the vowels, attack and release, attentiveness, the extension of range (especially upwards), the control of volume, agility and flexibility, and clear enunciation.

The work of the day may be opened by a suitable 'morning song'—a greeting, a hymn, or some other song that may be deemed appropriate to the occasion. Each regular music-lesson should be preceded by about one minute of breathing-exercises, two minutes of voice-exercises, and two minutes of ear-training.

Ear-Training

In the infants' school the training of the ear—so-called, although it is essentially a mental rather than a physical

process—may begin with practice in discrimination between the sounds made by striking various objects. With their eyes closed, the children can soon tell whether it is a glass, a bell or a piano that has been struck. Next they may attempt to identify the voice of a child, whether speaking or singing. They may also play the game of searching for hidden objects, the seeker being guided in his movements by the loudness or softness with which the tune is played. Another interesting exercise is the identification of tunes from the rhythm alone, without the aid of the melody. All these amusing occupations require keen attention on the part of the listener. At a later stage, pupils should have practice in distinguishing between variations in the intensity, pitch and duration of sounds. By imitating musical phrases, they will strengthen their memory for pitch; and as soon as possible they should give the sol-fa names of the sounds as they are sung. The strong tones commencing with *doh* will soon be identified and remembered, in whatever order they may be presented; and subsequently other and more difficult exercises may be undertaken.

Sight-Reading

The great advantage of the sol-fa notation is that it provides for the mental grasp of the relation of each note of the scale to the key-note. But the sol-fa should not be regarded as an alternative to the staff notation, its value being merely introductory. The staff notation alone is accepted in all places, for all instruments, and for every type of music. Once the pupils know the tonic sol-fa modulator, a staff modulator should be drawn on a large scale on the blackboard. On this the notes can be just as easily read, since the principle of a vertical scale is retained. Some teachers prefer to start from the outset with the staff notation: but there is a distinct advantage to be reaped from the retention of the tonic sol-fa names, which assist the pupils to gauge pitch correctly. After a time, however, *laa* or some other syllable can be substituted in sight-reading for the tonic sol-fa names.

Far too much may be made of the modulator, which should be regarded as little more than a means of correcting mistakes and of illustrating musical phrases. Exercises on the modulator should generally be founded upon some simple rhythm which can be revealed by the way in which the pointer is used; and generally speaking, the intervals to be practised on the modulator should be such as occur frequently in songs.

As soon as the pupils are old enough to use books, sight-reading from the book must be practised. This is the type of music-reading that alone will be used when school-life is done. Mistakes in pitch need not involve the discouraging requirement of going back each time to the beginning, being in reality less serious than mistakes in time.

Among the early sight-reading exercises practised by children, time-exercises should be taken apart from difficulties in pitch, and pitch-exercises apart from difficulties in time. Tune-exercises, taken in general from books, will afford ample opportunities for the simultaneous treatment of pitch and time.

The Teaching of Songs

In the Board of Education's *Handbook of Suggestions for Teachers*, the reader may find a helpful discussion of the teaching of songs, to the main points of which his attention should here be directed. On the ground that folk-songs and additional ballads must be regarded as the people's classics, it is recommended that from these sources the earliest songs of children should be drawn. Such songs, having survived by merit alone, and sometimes only orally, are entirely free from the tawdry vulgarity and silly sentimentality of much of the popular music that falls upon children's ears, and may serve therefore as a standard by which inferior music will be weighed and found wanting. Among the tunes with which children should become familiar at an early age are those of strong and wholesome hymns. Also many of the English, French and Swedish game-songs and nursery rhymes will be found useful as a base from which more difficult traditional

songs may be approached. They are better than the modern songs to which children are expected to play or act. There are many of the traditional songs whose words the children cannot fully appreciate or understand, but such songs are worth learning for the tune. The plan of setting apart the last quarter of an hour on Friday afternoon for a kind of 'community singing' by the whole school is recommended as a means of preventing these songs from being forgotten; but such singing cannot be relied upon to maintain a high standard.

For the upper classes, there is nothing to equal the songs by really great composers, such as Bach, Mozart, Haydn, Handel, Byrd and Purcell, in addition to some excellent songs by modern British composers which may be sung in unison. Many, not few, songs should be learned. For the best of songs may be staled by overmuch repetition; and even if this were not so, it is necessary that the principles of extensivity and variety should be respected, as well as the principle of merit. It is important, therefore, that the class should have a sufficient supply of song-books to go round, so that at every music-lesson a new tune may be learned.

The following account of the technique which may very well be adopted in teaching a new tune is quoted from the Board of Education's *Handbook of Suggestions for Teachers*, p. 255.

A new tune should be taught not only in the quickest way possible but in one that is not purely mechanical. The following method has proved very effective. Let the teacher write out . . . the *pitch* only of the tune to be learned; then, as the children sing it (to the sol-fa syllables), let the pointer, following the notes, tap the rhythm of the tune. The children will respond at once. At the end of the third repetition it will be found that the class can sing the tune in rhythm without any pointing; and at the end of the fourth they will sing it with the blackboard reversed. The whole of this takes only three or four minutes, and in the end, not only have the children learned a new tune, but they have, so far as pitch is concerned, read it, and, as they now have a tune in their heads with the sol-fa syllables attached, they have had in addition a valuable piece of ear training. In writing the notes it is only necessary to indicate by a short dash the line or

the space required, and the adoption by the class of this plan of writing notes would save endless time in staff dictation. . . . Rhythmic tapping is only applicable to tunes in which the pitch alone of the notes is indicated; it should on no account be used in cases where both pitch and rhythm are written on the blackboard.

Part-Singing

Singing in parts, while it should be much less prominent during childhood than singing in unison, ought to be introduced in the upper part of the school so that pupils may learn to hold their parts independently. Rounds, catches, exercises, duets and simple part-songs will be found more suitable for classroom purposes than difficult compositions, although limited portions of advanced themes may often be taught with success by teachers who are musically gifted themselves. When part-singing is practised, the same children should not always be allotted the same part; neither in mixed classes should the girls always be given the treble, and the boys the alto. The best songs for two-part rendition are those which were originally written for two parts. Traditional songs with descants are not only useful for purposes of practice, but valuable in respect of their musical effectiveness.

Other important points which are emphasized in the Board of Education's *Handbook* are position, enunciation, interpretation, and conducting. The best *position* of children for standing to sing is described paradoxically as 'alert relaxation'.

It should be easy and upright, without any exaggerated inflation of the chest; the feet should be a little apart with the weight thrown slightly forward; the hands should hang slackly at the sides, and the chin should on no account be raised, nor the head thrown back. Occasionally the children may be allowed to sit for the sake of change in position, but they should on no account be allowed to lounge.

Enunciation requires close attention, as it should be quite as clear in singing as in speech. As regards articulation and enunciation, the children should sing exactly as they speak, but with special attention, not only to vowels and diphthongs, but to the resonant consonants, *m, n, l, ng, z, th* (hard),

g (soft) or *j*, and *v*. Nor should any one vowel sound, however pleasing its quality, such as *ah*, *o* in *odd*, or *oo*, be used so extensively in practice as to involve the neglect of other vowels. On the contrary, those vowel sounds which are locally the least well produced should be carefully practised in the singing-lesson.

The *interpretation* of a song should not be mechanical or merely imitative, but should express the spirit which moves the singer. What the teacher has to bear in mind is that the spirit of the singer can be brought home to children much more easily by means of a story or a picture than by detailed explanation of the significance of the words of the song. The music-lesson is not to become a language-lesson.

It is easy enough to teach children the essentials of the art of *conducting*. The writer has seen a child of five in the kindergarten conduct a song beautifully, but on inquiry it was revealed that her father was the professional conductor of an orchestra. When children move to a tune, they can easily mark its time, and when permitted to sing their songs unconduted they soon get into the habit of keeping the time for themselves. The teacher himself must always be able to beat time, but will often let the class interpret its own songs. In conducting, it is necessary to guard against drawling, and occasionally against over-accentuation of the rhythm, the sense of which is so strong an element of human nature.

Mistakes and Difficulties

In the Board of Education's *Handbook*, under the head of 'Mistakes and Difficulties', it is pointed out that the usual assumption that the compass of the voice of young children is both small and low is not borne out by facts; for example, children speak and call to one another in a high tone of voice. The children should sing easy phrases after the teacher, who by insisting upon quietness in singing may remove the temptation to use the 'chest register' which might otherwise ruin their efforts. Most songs written for young children are pitched too low. Children seldom sing sharp,

but flat singing is not infrequently to be heard. Flat singing may be the result of bad ventilation, oppressive or depressing atmospheric conditions, strain caused by standing too long or too stiffly, a condition which may be relieved by making the children laugh, use of the 'chest' instead of the 'head' voice, or even mere inattention, such as often results from familiarity. Sometimes, indeed, the piano itself may be out of tune.

Melodic Training

If every teacher had the same mastery over music that he has over English, a thing that cannot reasonably be expected, there would be no good reason why children should not learn musical composition as they do English composition, from the very outset. It is certainly advisable that they should approach the subject at times from the creative side; and a number of experiments in the self-expressive rather than the imitative approach to musical culture have been crowned with signal success. It will, at least, be within the powers of pupils who have learned their musical notation to complete a simple tune by adding two bars of their own to two bars which the teacher has written for them. The various attempts of individual pupils to do this should be criticized by other members of the class. More difficult exercises in the completion of musical phrases may follow. When first the composition of a whole tune is attempted, the pupils should be limited to the 'pentatonic' scale, omitting the fourth and seventh notes of the scale ordinarily used. The verse to which the tune is to be written should be supplied, preferably from a nursery rhyme which suggests strong rhythm, but little feeling, so that the difficulty of reconciling melody to emotion may be obviated.

Appreciation of Music

No doubt the youngest children like music best when they move to it. Hence their songs are acted, interpreted or dramatized by themselves. They are soon able to tell whether a tune is grave or gay; and frequently they may be consulted

as to which of the songs they hear they would like to learn. To the older pupils, definite lessons should be given on musical literature, in which talking should occupy very little of the time, and music nearly all. In connection with such lessons, the gramophone, although it has some obvious limitations, is of the utmost service. The advantages of the gramophone are that it represents a fine performance, displays clearly the musical 'colour' of various instruments, covers a wide scope, and provides for exact repetition whenever such repetition is required. The musical form of a simple piece may occasionally be illustrated by the analysis of a well-known tune. Whenever possible, the older pupils should attend suitable concerts and orchestral performances, and otherwise be brought into contact with music of the highest standard.

CHAPTER XXV

MANUAL WORK

Organization of the Course of Study

IN these pages the curriculum of the elementary school has been viewed as an abstract or summary of the essentials of civilization. These essentials must be handed on to the younger generation. Of what do they consist? Are not the following the greatest, the most vital, the most enduring of the achievements of organized society—language, mathematics, knowledge of the past, knowledge of the world about us, physical science, music, art, health, religion, character, commerce and industry? Normally, each of these mighty achievements of the race is represented by a definite subject in the primary curriculum. For language there is English, for mathematics arithmetic, for the knowledge of the past history, for the knowledge of the world about us geography, for physical science nature-study, for music singing, for art drawing, as well as painting and modelling, for health physical training and hygiene, for religion Scripture-reading or denominational instruction, for character civics and morals, for trade commercial geography, and for industry manual work.

Manual Work as Related to Industry

Naturally, public opinion is far from unanimous upon the question of the adequacy with which each of the great elements of civilization is represented in the primary school. There are some who think that character should be more systematically trained than it is, others that it should not be trained at all except incidentally—that there should be no specific moral or civic instruction. Some hold that there is too much religious instruction, others that there is too little, and so on. In the writer's opinion, no important phase of civilization has been so feebly interpreted in the schools as industry—the world's work. Manual work, although from

its place in the order of studies it would appear to represent this aspect of social endeavour, usually conveys only the barest glimmer of a comprehension of modern industrial life.

Only in one way can the deficiencies of 'manual work' as the scholastic representative of industry be made good. Since the world's work cannot be brought into the schoolroom, the school must go out to the world's work. In the matter of excursions, the position of manual work is analogous to that of nature-study. For, whereas arts, like language, and most other school subjects, may be taught adequately within the schoolroom, manual work and nature-study cannot be satisfactorily dealt with in this way, even though much may be learned about them from books and magazines. In these subjects, the direct study of highly complex phenomena is required. If the intention of manual work were merely to represent very simple industrial operations, such as were conducted in the less skilled manufactures of the Middle Ages, then the handwork of the elementary school might possibly be deemed satisfactory; but if the aim be to represent modern industry, so favourable a judgment can hardly be passed. For neither the tools, the methods nor the conditions of the world's work as it is now conducted in the factory have much in common with those which are generally to be found in the school. But the worst of all is that in the elementary school none of the scope, the art or the romance of modern large-scale industry is indicated or touched upon. The teachers themselves, however well equipped in other respects, hardly know where to begin, and many a one, if he were asked to prepare his pupils in a general way for 'industry', as he prepares them for language, science, art or religion, would shrug his shoulders and give the problem up. But the solution of the difficulty is only a matter of aims, methods and perseverance; there is nothing impracticable about it.

If manual work should be regarded as the subject whose function it is to introduce children to a knowledge of industry and of industrial life, then its methods should be those of

discussion, excursion and illustration. The objects that are made should be selected with a view to their possibilities of throwing light upon industrial operations, and particularly of illustrating those aspects of industry which the pupils have been able to see and to study. But since great uncertainty still prevails in the minds of educationists regarding the real reason for the inclusion of manual work in the curriculum, it is unnecessary here to labour this discussion further. A fuller statement of the writer's ideas has been published in a monograph entitled *Industrial Education in the Elementary School*, in which it is maintained that the soundest reason for manual work in the elementary school is the necessity of giving to all children a reasonable knowledge and understanding of industry and industrial life. } Many of those who do not accept this theory are still groping about in the darkness under Tartarus for reasons to buttress a subject which they feel to be inevitable, but are somewhat at a loss to justify.

The Aims and Purposes of Handwork

The subject of the aims of manual work cannot be dismissed with the mere indication of a single theory, such as that which has been offered above. ✓ If the representation of industry in the course of study is its proper function, manual work also has subsidiary aims. ✓ For example, on grounds of exercise, recreation and utility, ✓ Locke recommended that a gentleman's son should be taught a manual trade. The same suggestion was reiterated by Rousseau, but on social grounds, since he felt that manual work tends to keep the young in proper sympathy and understanding with the common people. Pestalozzi valued handwork for general educational purposes, and especially for training the mind through the senses. Fellenberg regarded agricultural training and other manual occupations as means whereby man draws nearer to nature. Froebel thought of constructive operations as a type of activity in which the child assumes the highest function of which he is capable, that of creating, in which is revealed

his kinship to the Creator. In Sweden, one of the first countries in which manual work was established in the elementary school upon a large scale, the chief aim at first was 'hand and eye' training. The only tool considered necessary at the outset was a sharp knife, and the only material, wood suitable for carving. But although valuable co-ordinations of hand, eye and muscles are doubtless to be effected in this way, they might possibly be attained even better by playing cricket, so that apparently the rationalization of handwork has to be sought elsewhere.

✓As manual work came to be more generally adopted, it was often justified, not on any of these grounds, but from an artistic point of view, as an expression of beauty and a means of creating beautiful things. On the other hand, some theorists have maintained that manual work in elementary education should be of the nature of a recapitulation of the type of industry which appeared in the early history of the race, so that it should include, for example, the making of wigwams and simple pottery and baskets, as well as other objects characteristic of a period of culture which they believe to be paralleled in the life of the child. Others have been tempted to regard manual work as ancillary to other subjects, in whose interests it may provide suitable illustrations. But surely this value of handwork is not fundamental, but incidental. Many have maintained that handwork, since it involves action, has a peculiar moral value; this may be so, yet there is no guarantee that to plane a piece of wood straight means learning to live a straight life. Much may be said in favour of most of these rationalizations of the appearance of manual work in the curriculum; ✓but what is good in them may be retained if the theory be adopted that the main function of the subject is to introduce children to a reasonable knowledge of the methods, processes and conditions of modern industrial life. ✓

Handwork in Infants' Schools

Like industry as a whole, handwork involves the transformation of materials into ideal forms. The youngest chil-

dren may make many things with their hands, without tools. Modelling in clay or plasticene, and on the sand-tray, may begin as soon as the child comes to school. So also may building with blocks. Other occupations involving handwork which are suited to the conditions of infants' schools include the weaving of broad strips into mats, card-sewing, paper-cutting, paper-folding, making simple objects of paper, spool knitting, threading beads, easy poster-work, easy raffia-work and the making of suitable toys. The child should handle many materials, whereby he gradually becomes aware of his own powers, and also of their limitations. The skill of the teacher is demonstrated even more conclusively by the way that he introduces new materials to the pupil at appropriate times, than by the manner in which he shows the pupil how to use them. Soon the time comes when the child desires to make things that will be worth while, and such a spontaneous desire should be readily and sympathetically met.

The soundest principles of education suggest that young children should begin by making whatever they like with the materials provided, but little good will be done by leaving their efforts uncomparred with those of their classmates or of the teacher. Progress unaided is very slow, so that the educational problem takes the form of maintaining the child's sense of freedom at the same time that he is receiving suggestions and guidance from the teacher. Nor need criticism, if kindly, be withheld. Although it will be the child that decides, it will be the teacher who really directs. In one particular, unrestricted freedom should be allowed. If the child wants to model in clay, it is unnecessary and unwise to compel him to use paper; and generally speaking, he may be permitted to explore all materials and to use those that seem to him the fittest for his purpose.

Even when children have to be instructed as a group, they should not be restricted to imitative efforts. Let them think things out. In some lessons, for example, when sand-trays are used, they may work as adults frequently have to do, in groups, each group under the leadership of one of themselves.

In other lessons they will work individually, each trying out the teacher's directions, for while 'free expression' should always find a place, there is no good reason why it should occupy the whole of the pupils' time. Thus some objects should be made independently, others under guidance.

Handwork in the Primary Grades

In the primary as distinct from the infants' school, there should be no construction not preceded by planning, all plans being kept in a special book reserved for the purpose. According to current traditions, the younger classes may engage in paper-modelling, raffia-work, cord-work or toy-making; and the senior classes in cardboard-modelling, reed basketry with pith cane or substitutes, coiled basketry with raffia on a foundation of cane, light wood-work, wire-work, bent iron-work, or even more ambitious activities, such as book-binding, metal-work, wood-carving or leather-work. Most of these occupations are equally suitable for boys and for girls; but while metal-work and wood-carving are more often practised by the former, needlework is generally confined to the latter. Even this degree of differentiation appears to be founded rather upon accepted convention than upon any fundamental principles relating to sex. Such principles, indeed, play a relatively small part in connection with the instruction of children below the age of twelve.

Standard Models

Whenever it is deemed advisable that the children's work shall be standardized—and care must be taken that it is not all done according to fixed conventions, which would result in the elimination of self-expression—the teacher will be wise to construct a standard model himself, so that he can become familiar with all the processes and difficulties involved, and with the order of their probable appearance. With such a model the work of the pupils should be compared, either by themselves or by the teacher, and in relation to it the quality of their performance will be estimated or

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judged. It does not matter if the workmanship of some of the best pupils should be superior to that displayed in the model, any more than it matters if some of the pupils should happen to write a better hand than their teacher. And just as the teacher of boys should make and display standard models in wood and metal, so the teacher of girls will supply standard samples of needlework to be used in a similar way, but the manual work of the pupils must not be confined to operations that have been standardized.

Types of Handwork

In the primary grades, no object should be constructed until a plan of it has been drawn. Exactness of measurement must be demanded. This will be so whether the handwork is intended to illustrate some experience or idea of the pupil's own, or whether it forms part of a systematic course, involving the construction of an object in the light of the directions which have been given by the teacher. For illustrative work that does not need to be permanently retained, plastic materials are in greater favour than others. But even when pupils are making objects to illustrate ideas of their own, there is no reason why the teacher should be satisfied with a low standard of execution. As to the drawing of plans, it is clear that only easy plans and elevations should be attempted at first, but by the end of the course the pupil should be able to make a good scale-drawing of any simple object that he may desire to construct.

Size of Classes

In the Board of Education's *Handbook of Suggestions for Teachers*, some difficulties which attend the teaching of elementary handwork, with illustrations of how they may be wholly or partly met, are reviewed to the following effect. Three general difficulties which are more prevalent in junior than in post-primary work relate to (1) the size of classes, (2) the supply of materials, and (3) classroom equipment. The difficulty of conducting manual work with a large class

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may be overcome to a measure by dividing the pupils into groups or teams, each group being made responsible for carrying out a certain task, such as modelling a castle or a Manor, a railway-station or a factory, or generally speaking, some object the parts of which may be more readily made and assembled by a group of co-workers than by a single individual.

Materials

The difficulty of finding materials is often greater than that of teaching large classes. Since it can hardly be expected that the objects made will be of sufficient value to justify the use of expensive materials, it is necessary that as much use as possible should be made of waste cardboard, wall-paper, wire, metal, wood, spools, etc. On the other hand, pupils are so quick to understand that objects made of such materials are held in light esteem, that whenever possible opportunities should be made for the construction of some articles of intrinsic value, such as nets, mats, baskets, cardboard boxes, bags, purses and slippers, or sometimes for binding books or making useful objects from laths or other light wood.

The 'Practical' Room

The third general difficulty, that of obtaining proper equipment for the classroom, is only likely to be solved as the schools come to adopt the plan, already recommended in connection with nature-study, of setting apart a 'practical' room in which the various manual and experimental activities of the classes may be centred. Many teachers make shift with no better material than the ordinary desks. These may be improved upon considerably if detachable tops can be provided. Cupboards, shelves, a clay box, and at least one or two Bunsen burners should be added to the equipment of any room that is intended primarily to be the theatre of practical or experimental activities.

Woodwork

While it would be unnecessary and burdensome to include in the present treatment a discussion of the teaching of all

the many forms of handwork that are appropriate to the elementary school, there are two of these that should receive more detailed attention, namely, woodwork for boys and needlework for girls. The procedure in these varieties of manual work, having stood the test of time, is in some danger of becoming stereotyped. The elaborate technique of woodwork and needlework may easily become too conventional. Indeed, if handwork should come to be generally regarded as the subject through which a reasonable acquaintance and sympathy with modern industry and industrial life shall be conveyed to the pupils, then much of this technique will have to be recast. For in that case the main object of woodwork, etc., will be to illustrate by the construction of models some of the processes or products of modern industry that have been seen by the pupils on one of their excursions, and most of the standard models will have to go into the museum of pedagogics.

✓ In default of the recognition of industrial intelligence as the central aim of handwork, it is customary for woodwork to be done in a series of graduated exercises, so carefully ordered that a new tool, or a new use of a tool, is introduced at each successive lesson. ✓ If the aim of woodwork, indeed, is to teach the use of tools, no better plan can be devised; and since to the majority of men such knowledge and skill are likely to prove of real utility, no exception need be taken to this practice, provided it be understood that in this connection no serious attempt is being made to prepare pupils for a comprehension of the character of modern industry. For whatever the aim of manual work, some amount of training in the use of tools would always be indispensable.

No slipshod work can be passed. The objects made must be varied in plan and in methods of construction, but a few objects well made are to be preferred to many that are ill-fashioned or unfinished. Posture is important, and as in handwriting, so in woodwork, it matters that the tools should be employed rightly from the very beginning, lest bad habits be built up. That part of woodwork which is not meant

to be illustrative or secondary to some other subject, but is intended as an integral part of a developmental course, may be conveniently illustrated by models which are conspicuously placed about the room. Some of these models may be unfinished, but so disposed as to reveal the object at characteristic stages in the course of its construction. By comparing it with a standard model, the work of a pupil may be evaluated with much greater consistency and accuracy than could otherwise have been attained. Whenever standardized objects have to be made by pupils, the following suggestion may be adopted to good advantage:

Bench notes, written on cards corresponding to each model, and showing the sequence of the different exercises in the development of the model, will give the boy sufficient data for proceeding with the work without waiting for the teacher's instruction. Habits of independence and self-reliance are thus fostered, and the teacher has more time to give to the pupils requiring special attention.

Orderliness in the arrangement of the room and its contents is directly related to efficiency. The greatest care should be taken both of the tools and also of the benches, which must not be needlessly damaged. When it has been used, each tool should be replaced immediately in its rack or cupboard. Working-drawings must be regularly consulted, so that every point of construction shall be compared and related to them. Sometimes collections of timbers or leaves made and mounted by the pupils are displayed on the walls of the practical room or workshop.

Drawing

The drawing which is done in connection with woodwork provides valuable training in observation, accuracy, care and judgment. Most of it is mechanical. The earlier drawings of the pupils should be made from finished models, the dimensions of which have been carefully measured. The technique which may be recommended for adoption at this point may be quoted from a *Course of Instruction for Primary Schools*:

From the information thus gained the teacher should prepare rough sketches, marking in dimensions, and from these proceed to prepare a finished working-drawing. Later, the pupils should take a model, analyse it for themselves, make their own rough working sketches, and then proceed to execute the finished drawing. All drawings must be neat and accurate. The cleanliness of books should receive special attention from the teacher. Pencils should have correct points, and rubbers should be used as little as possible. The pupils should be shown how to use the various drawing instruments required in the work. Most drawings in the Manual Training room consist of plans, elevations and sections. The preparation for such drawings involves a knowledge of the principles of orthographic projection, but it is not advisable to enter into an elaborate explanation of these principles with beginners.

At the outset, pupils should be taught to prepare a picture or view of various surfaces of the particular model to be made, such pictures being sufficient to enable them to obtain an idea of the shape and arrangement of the various parts, and the dimensions of any portion of the work.

By the aid of hinged pieces of wood, made to represent the planes of projection, the pupils may be given an insight into the meaning and use of solid geometry. Exercises should also be given in isometric and oblique drawing. The title and date should be entered on each drawing made.

Post-Primary Handwork (Boys)

✓The manual work done by boys over the age of eleven or twelve generally differs from that of girls. ✓For boys, wood-work and metal-work serve to give some measure of mastery over materials that cannot be manipulated or conquered without the exertion of muscular strength. But other materials than wood or metal need by no means be rejected. The objects made should be either useful or illustrative, and many of them should be selected by the pupil himself. It is even more important that the plan, or constructive design, of a model should be the pupil's own, although in the earlier stages much guidance in planning may have been deemed necessary. The quest of good workmanship must be earnestly maintained, but not to an extreme which leaves the pupil in a state of dissatisfaction and discouragement. Many pupils have the ambition to decorate their work. They

should learn that decoration and construction are arts by no means distinct, and that a great part of the decoration of an object may have been comprehended in the original design. Decoration not foreseen from the outset is seldom worth while. Nor is 'good taste' a quality to be assumed, but rather one to be systematically cultivated, chiefly by the examination of specimens, pictures or photographs of work of the highest merit and talent. Different kinds of decoration are suited to different crafts.

Nothing so surely dampens the enthusiasm of young workers as being kept too long upon the construction of one object. On the other hand, children look forward to having made a 'finished' product. For this reason, staining, enamelling or painting should be added as a final touch to articles made in white wood. Nor is there any objection to 'repair' work which possesses interest and value in the minds of the pupils. Boys may bring to school various articles to be repaired, and may make some of the implements which they require for their hobbies. Usually such work has to be done out of school hours.

Needlework

It is expected that by the time a girl reaches the age of eleven or twelve, she may know how to use needle and thread, to do various sorts of simple sewing, and probably to knit. As in other arts, from the beginning close attention must be paid to correctness in the use of needle and thimble, since in the long run a bad habit of sewing may give more trouble than no habit at all. A difficulty may arise in reconciling the facts that on the one hand the girls must practise stitchery carefully and assiduously, and on the other hand the instruction which they receive must be made interesting. The antithesis may partly be resolved by the employment of *decorative* stitchery, which is, at the same time, easy and varied, constructive and ornamental. It would be unreasonable to expect fine stitches of young children, but evenness is always to be desired, and should be achieved ultimately,

not by the mechanical means of measurement, or by the counting of threads or employment of dotted lines, but by a gradual discipline of the judgment through attention and use. In fulfilment of the general principle of self-expression, the girls themselves should do the planning, measuring and cutting of paper patterns and the cutting-out of the materials which they are to sew. In this way they tend to gain confidence and competence, and to exercise their natural powers of reflection, choice and initiative.

Post-Primary Handwork (Girls)

It is no longer considered necessary that older girls—although, no doubt, they should be able to do ordinary house-craft and needlework—should confine their handwork to these traditional forms. Needlework itself is being developed in fresh and decorative ways to accord with the texture, design and colour of materials of different kinds. In some schools it is supplemented by dyeing, spinning and weaving. Similarly, drawing and design are being raised to a higher degree of artistic merit and originality, and applied to various forms of arts and crafts. Even the most talented girl should seldom attempt more than one or two crafts. These, however, should be pursued continuously for a longer period than is allotted to other lessons, for the school does not exist to stultify and retard special ability, but to guide and encourage it.

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